

Cisco Security Cloud Control: Firewall Management for Government

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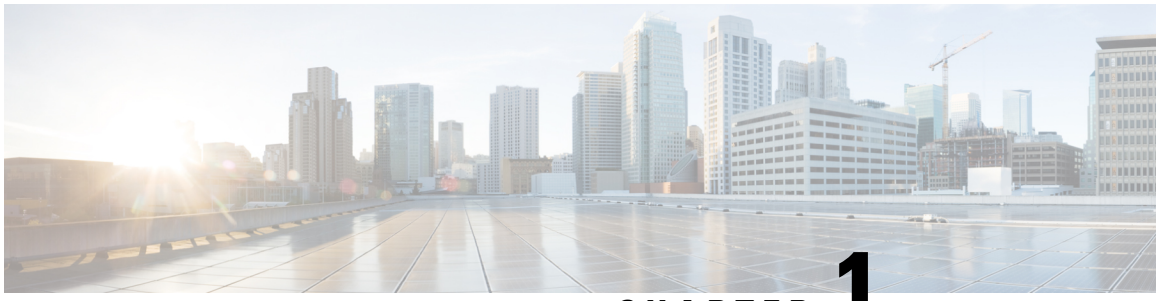
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PART I

Introduction

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- Configure basic settings, on page 7
- Manage Tenants and Users, on page 119



CHAPTER 1

Welcome to Cisco Security Cloud Control Firewall Management for Government

- Overview of Security Cloud Control Firewall Management, on page 1
- Create a Security Cloud Control Tenant, on page 2
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Overview of Security Cloud Control Firewall Management

Security Cloud Control Firewall Management (formerly Cisco Defense Orchestrator or CDO) is a cloud-based security policy manager that helps simplify and unify security policies across your Cisco firewalls and other devices such as Cisco IOS and SSH. The firewalls and devices can be managed from **Firewall**, which is listed under **Products** in the Security Cloud Control dashboard.

Security Cloud Control Firewall Management helps you optimize your security policies by identifying inconsistencies within them and by providing with the tools to fix them. It provides you with ways to share objects and policies, as well as create configuration templates, to promote policy consistency across devices.

Because Security Cloud Control Firewall Management coexists with Adaptive Security Device Manager (ASDM), it keeps track of configuration changes made by ASDM and reconciles the differences.

You can manage a wide range of devices in one place. Advanced users will also find their traditional CLI interface with some new enhancements to make management even more efficient for them.

Security Cloud Control Firewall Management also provides a guided "Day 0" experience, helping you to quickly onboard Threat Defense devices to your on-premises or Cloud-Delivered Firewall Management Center. It also presents you with other key features that you may benefit from and helps you enable and configure them.

Supported Features for Security Cloud Control Management: Firewall for Government

Cisco Security Cloud Control Management: Firewall for Government provides you with the following security functions:

- Management of Secure Firewall ASA and Secure Firewall Threat Defense devices, supporting both physical and virtual form factors.
- Security Analytics & Logging (SAL) Integration: Integration with the Security Cloud Control dashboard for enhanced event viewing and security analytics.

- Lightweight Security Package (Snort 3) updates for advanced intrusion detection.
- Automatic updates for Vulnerability Database (Vdb) and Geolocation Database (Geo db).

Device onboarding requirements

Before you onboard a device, complete these prerequisites:

- Complete the installation wizard.
- License the device.

After you complete those prerequisites, use the Security Cloud Control Firewall Management onboarding wizard to onboard the device.

Keep these restrictions in mind:

- After you onboard devices to a Security Cloud Control Firewall Management associated with an organization, you cannot migrate those devices to another organization.
- To move devices to a new organization, you must re-onboard them to the new organization.

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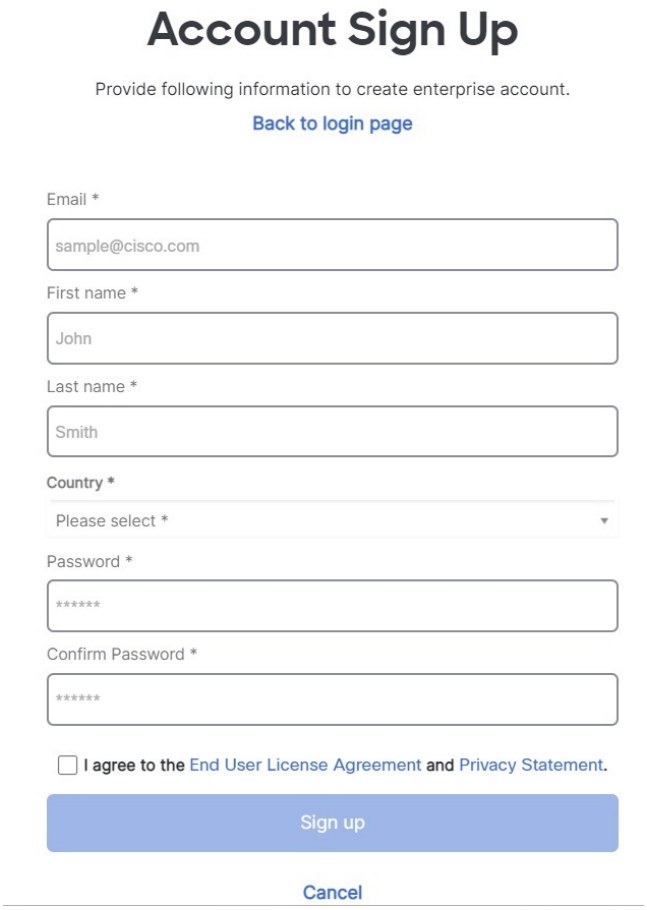
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Create a Security Cloud Control Tenant

You can provision a new Security Cloud Control tenant to onboard and manage your devices. If you use an On-Premises Firewall Management Center Version 7.2 and later, and want to integrate it with the Cisco Security Cloud, you can also create a Security Cloud Control tenant as part of the integration workflow.

Procedure

1. Go to https://us.manage.security.cisco.com/provision.
2. Select the region where you want to provision your Security Cloud Control tenant and click **Sign Up**.
3. On the **Security Cloud Sign On** page, provide your credentials.
4. If you do not have a Security Cloud Sign On account and want to create one, click **Sign up now**.
   a. Provide the information to create an account.



Here are some tips:

- **Email**: Enter the email address that you will eventually use to log in to Security Cloud Control.
- **Password**: Enter a strong password.

b. Click **Sign up**. Cisco sends you a verification email to the address you registered with.

c. Open the email and click **Activate account** both on the mail and the **Security Cloud Sign On** page.

d. Configure multifactor authentication using Duo on a device of your choice and click **Log in with Duo** and **Finish**.

Note We recommend installing the Duo Security app on a mobile phone. Review Duo Guide to Two Factor Authentication: Enrollment Guide if you have questions about installing Duo.

5. Provide a name for your tenant and click **Create new account**.
6. A new Security Cloud Control tenant is created in the region that you have chosen; you will also receive an email about your Security Cloud Control tenant being created, with the details. If you are associated with multiple Security Cloud Control tenants already, on the **Choose a tenant** page, select the tenant you

just created to log in to it. If you have created a new Security Cloud Control tenant for the first time, you get logged into your tenant directly.

For information about managing a Security Cloud Control tenant and various tenant settings, see Tenant Management.

Upgrade your Security Cloud Control tenant to full version

If you are using a free trial version of Security Cloud Control, you will keep seeing the **You are in a free trial of** Security Cloud Control banner, with the number of days left in the trial period. You can choose to upgrade your Security Cloud Control tenant to the full version anytime during the trial period. Contact your Cisco sales representative or contact Cisco Sales, and they can place an order on your behalf and get you the sales order number.

Once you obtain the sales order number, click **Upgrade to full version** on the banner and enter the order number to begin using the full version of Security Cloud Control.

Request Security Cloud Control trial period extension

If you want to continue using the trial version for 30 days, click **Request for an extension**.

Security Cloud Control Firewall Management dashboard

The Security Cloud Control Firewall Management dashboard is your central hub for monitoring and managing organization-level details across various categories. Upon logging in, you can access a customizable dashboard that offers critical insights and actions to optimize security and operational efficiency.

Customize your dashboard

Make your dashboard fit your specific needs by customizing the visible widgets:

1. On the **Home** page, click **Customize**.
2. Select or deselect dashboard widgets and drag and drop them to arrange in your preferred order.

Top Information

This section provides detailed insights into various tenant-level metrics. If enabled, you can view the following widgets:

- **Configuration States**: Indicates the discrepancies between the configurations on your devices and those maintained by Security Cloud Control. This comparison helps identify any inconsistencies or conflicts that may exist.

  For more information, see Device Management.

- **Change Log Management**: Helps you manage the change logs for precise operational control. The widget displays **Completed** and **Pending** change logs.

  For more information, see Change Logs.

- **RA VPN Sessions**: Helps you monitor your Remote Access VPN sessions.

  For more information, see RA VPN Sessions.

- **Overall Inventory**: Helps you monitor the health and status of all devices. The widget displays the total number of devices, categorized into **Issues**, **Pending Actions**, **Other**, **Online** and devices that are nearing or have already reached their last day of hardware support.

  For more information, see All Devices.

- **Site-to-Site VPN**: Helps you manage and assess your site-to-site VPN connections. The widget displays the total number of VPN tunnels and the percentage that are **Active** and **Idle**.

  For more information, see Site-to-site VPN.

- **Accounts and Assets**:

  - Helps you track and manage your multicloud accounts and resources effectively. You can launch the Multicloud Defense Controller from here.
  - Click **+Add Account** to add a new account.

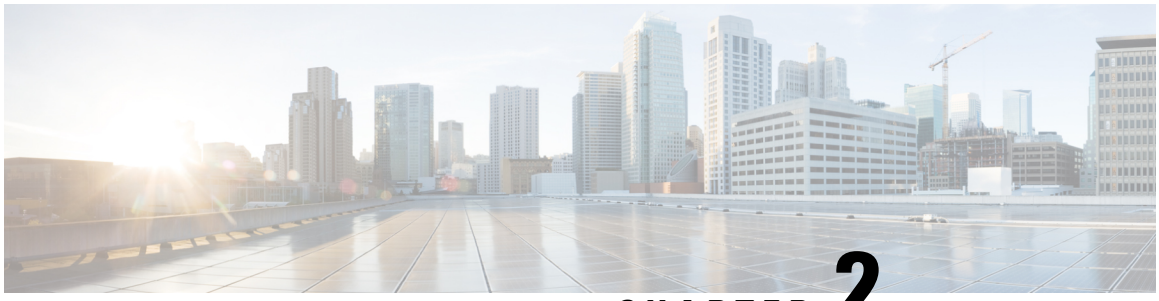
  For more information, see Multicloud Defense Controller.

- **Top Risky Destinations**: Helps you identify and monitor the top risky destinations that are granted access. The widget lists Applications and URL Categories and allows you to filter data for the last 90, 60, or 30 days. You can filter between **Allowed** (default) and **Blocked** traffic.

- **Top Intrusion and Malware Events**: Helps you monitor and respond to top intrusion and malware events. The widget displays intrusion events and malware events and allows you to filter data for the last 90, 60, and 30 days. You can filter between **Allowed** (default) and **Blocked** events.

Announcements

Click the **Announcements** icon to view the most recent Security Cloud Control features and updates. Links to related documentation are provided if you need more information on any of the items listed.



CHAPTER 2

Configure basic settings

Security Cloud Control provides a unique view of policy management through a clear and concise interface. Below are topics that cover the basics of using Security Cloud Control for the first time.

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Login Requirements for Security Cloud Control

The IdP account contains the user's credentials and the IdP authenticates the user based on those credentials. Mutlifactor authentication provides an added layer of identity security. The Security Cloud Control user record primarily contains the username, the Security Cloud Control tenant with which they are associated, and the user's role. When a user logs in, Security Cloud Control tries to map the IdP's user ID to an existing user record on a tenant in Security Cloud Control. The user is logged in to that tenant when Security Cloud Control finds a match.

Unless your enterprise has its own single sign-on identity provider, your identity provider is Security Cloud Sign On. Security Cloud Sign On uses Duo for multifactor authentication.

To log into Security Cloud Control, you must first create an account in Cisco Security Cloud Sign On, configure multifactor authentication (MFA) using Duo Security and have your tenant Super Admin create a Security Cloud Control record.

On October 14, 2019, Security Cloud Control converted all previously existing tenants to use Cisco Security Cloud Sign On as their identity provider and Duo for MFA.

Note

- If you sign in to Security Cloud Control using your own single sign-on identity provider, the transition to Cisco Security Cloud Sign On did not affect you. You continue to use your own sign-on solution.
- If you are in the middle of a free trial of Security Cloud Control, this transition did affect you.

If your Security Cloud Control tenant existed before October 14, 2019, see Migrate to Cisco Security Cloud Sign On Identity Provider, on page 9.

Initial Login to Your New Security Cloud Control Tenant

Before You Begin

Install DUO Security. We recommend installing the Duo Security app on a mobile phone. Review Duo Guide to Two Factor Authentication: Enrollment Guide if you have questions about installing Duo.

Time Synchronization. You are going to use your mobile device to generate a one-time password. It is important that your device clock is synchronized with real time as the OTP is time-based. Make sure your device clock is set automatically or manually set it to the correct time.

Security Cloud Control uses Cisco Security Cloud Sign On as its identity provider and Duo for multifactor authentication (MFA). If you do not have a Cisco Security Cloud Sign On account, when you create a new Security Cloud Control tenant, the provisioning flow involves various steps, including creating a Security Cloud Sign On account and configuring MFA using Duo. To create a new tenant, click here.

MFA provides an added layer of security in protecting your user identity. Two-factor authentication, a type of MFA, requires two components, or factors, to ensure the identity of the user logging in to Security Cloud Control. The first factor is a username and password, and the second is a one-time password (OTP), which is generated on demand.

Important **If your Security Cloud Control tenant existed before October 14, 2019**, use Migrate to Cisco Security Cloud Sign On Identity Provider, on page 9 for login instructions instead of this article.

Signing in to Security Cloud Control in Different Regions

These are the URLs you use to sign in to Security Cloud Control in different AWS regions:

Table 1: Security Cloud Control URLs in Different Regions

Region	Security Cloud Control URL
Asia-Pacific and Japan (APJ)	https://apj.manage.security.cisco.com
Australia (AUS)	https://aus.manage.security.cisco.com
Europe, the Middle East, and Africa (EMEA)	https://eu.manage.security.cisco.com
India (IN)	https://in.manage.security.cisco.com
United States (US)	https://us.manage.security.cisco.com

Troubleshooting login failures

Login Fails Because You are Inadvertently Logging in to the Wrong Security Cloud Control Region

Make sure you are logging in to the appropriate Security Cloud Control region. After you log in to https://sign-on.security.cisco.com, you will be given a choice of what region to access.

Migrate to Cisco Security Cloud Sign On Identity Provider

On October 14, 2019, Security Cloud Control converted all tenants to Cisco Security Cloud Sign On as their identity provider and Duo for multifactor authentication (MFA). **To log into Security Cloud Control, you must first activate your account in Cisco Secure Sign-On and configure MFA using Duo**.

Security Cloud Control requires MFA which provides an added layer of security in protecting your user identity. Two-factor authentication, a type of MFA, requires two components, or factors, to ensure the identity of the user logging into Security Cloud Control. The first factor is a username and password, and the second is a one-time password (OTP), which is generated on demand.

Note

- If you sign in to Security Cloud Control using your own single sign-on identity provider, this transition to Cisco Security Cloud Sign On and Duo does not affect you. You continue to use your own sign-on solution.
- If you are in the middle of a free trial of Security Cloud Control, this transition does apply to you.

Before You Begin

We strongly recommend the following steps prior to migrating:

- **Install DUO Security.** We recommend installing the Duo Security app on a mobile phone. Review Duo Guide to Two Factor Authentication: Enrollment Guide if you have questions about installing Duo.
- **Time Synchronization**. You are going to use your mobile device to generate a one-time password. It is important that your device clock is synchronized with real time as the OTP is time-based. Make sure your device clock is set automatically or manually set it to the correct time.
- Create a New Cisco Security Cloud Sign On Account and Configure Duo Multi-factor Authentication. It is a four-step process. You need to complete all four steps.

Troubleshooting Login Failures after Migration

Login to Security Cloud Control Fails Because of Incorrect Username or Password

Solution If you try to log in to Security Cloud Control and you *know* you are using the correct username and password and your login is failing, or you try the "forgot password" option and cannot recover a viable password, you may have tried to log in without creating a new Cisco Security Cloud Sign On account. You need to sign up for a new Cisco Security Cloud Sign On Account.

Login to the Cisco Security Cloud Sign On Dashboard Succeeds but You Can't Launch Security Cloud Control

Solution You may have created a Cisco Security Cloud Sign On account with a different username than your Security Cloud Control tenant. Contact the Cisco Technical Assistance Center (TAC) to standardize your user information between Security Cloud Control and Cisco Secure Sign-On.

Login Fails Using a Saved Bookmark

Solution You may be attempting to log in using an old bookmark you saved in your browser. The bookmark could be pointing to https://cdo.onelogin.com.

Solution Log in to https://sign-on.security.cisco.com.

- **Solution** If you have created your new secure sign-on account, click the Security Cloud Control tile on the dashboard that corresponds to the region in which your tenant was created:
  - **Solution** Security Cloud Control APJ
  - **Solution** Security Cloud Control Australia
  - **Solution** Security Cloud Control EU
  - **Solution** Security Cloud Control India
  - **Solution** Security Cloud Control US
- **Solution** Update your bookmark to point to https://sign-on.security.cisco.com.

Launch a Security Cloud Control Tenant

Procedure

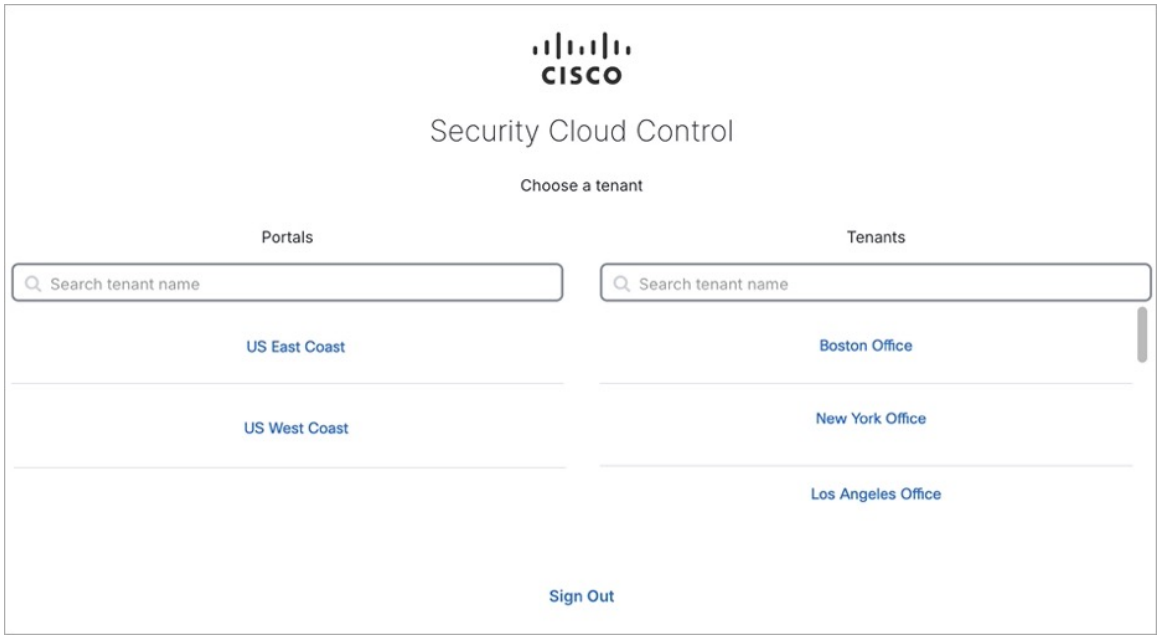
Step 1 Click the appropriate Security Cloud Control button for your region on the Cisco Security Cloud Sign-On dashboard.

Step 2 Click the authenticator logo to choose Duo Security or Google Authenticator if you have set up both authenticators.

- If you already have a user record on an existing tenant, you are logged in to that tenant.
- If you already have a user record on several portals, you will be able to choose which portal to connect to.
- If you already have a user record on several tenants, you will be able to choose which Security Cloud Control tenant to connect to.
- If you do not already have a user record on an existing tenant, you will be able to learn more about Security Cloud Control or request a trial tenant.

The **Portals** view retrieves and displays consolidated information from multiple tenants.

The **Tenant** view shows several tenants on which you have a user record.



Security Cloud Control Firewall Management Integrations Page

The **Integrations** page provides a comprehensive view of your managed infrastructure within Security Cloud Control Firewall Management:

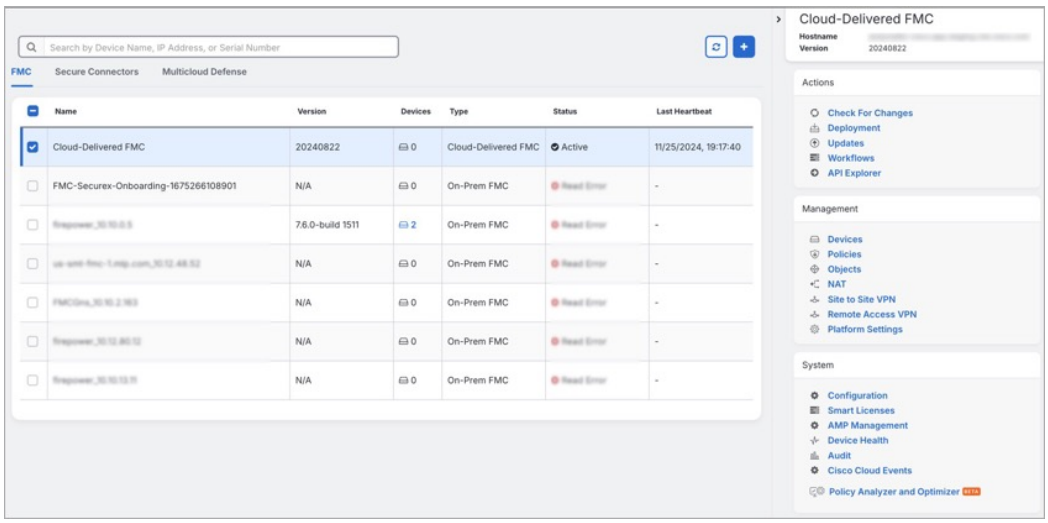
- **FMC** tab:
  - View the Cloud-Delivered Firewall Management Center that is linked to the Security Cloud Control Firewall Management account. Refer to Request a Cloud-delivered Firewall Management Center for your Security Cloud Control tenant .
  - View which on-premises Firewall Management Centers are onboarded to Security Cloud Control Firewall Management. Devices managed by these on-premises Firewall Management Centers appear in **Security Devices**. Refer to Managing On-Prem Firewall Management Center with Security Cloud Control.
  - Lists the **Secure Device Connector** and **Secure Event Connector** available under the **Secure Connectors**. Refer to Secure Device Connector and Secure Event Connectors.

Security Cloud Control. page. The **Integrations** page also lists tab.

Click the **FMC** tab, then click **Onboard FMC** ( ) icon to onboard an on-premises Firewall Management Center. In the right pane, perform device actions as needed. Refer to Onboard an On-Prem Firewall Management Center.

View device information, including version, device count, device type, and synchronization status. Click the managed devices icon to go to the **Security Devices** page. Devices managed by the selected on-premises Firewall Management Center are filtered and displayed. On the **Integrations** page, select multiple on-premises Firewall Management Center to perform actions on several management centers at once. Deselect the Cloud-Delivered Firewall Management Center before selecting other on-premises Firewall Management Center. To add a new secure connector or perform actions on existing secure connectors, choose the **Secure Connectors** tab and click .

In the left pane, click **Administration** > **Firewall Management Center**.



For your Cloud-Delivered Firewall Management Center, the Integrations page displays this information:

- If you do not have a Cloud-Delivered Firewall Management Center deployed on your tenant, click **Enable Cloud-Delivered FMC**. Refer to Enable Cloud-Delivered Firewall Management Center on Your Security Cloud Control Tenant for more information.
- The number of Secure Firewall Threat Defense devices deployed on the Cloud-Delivered Firewall Management Center.
- Status of the connection between Security Cloud Control and the Cloud-Delivered Firewall Management Center page.
- The last heartbeat of the Cloud-Delivered Firewall Management Center. This time shows when the Cloud-Delivered Firewall Management Center's status and device count last synchronized with the table on this page..
- The hostname of the selected Cloud-Delivered Firewall Management Center.

Choose **Cloud-Delivered FMC** and using the links in the **Actions** , **Management**, or **Settings** pane, you open the Cloud-Delivered Firewall Management Center user interface to perform the configuration tasks that are associated with the link you clicked.

Actions:

- **Check For Changes**: The Device Count and Status information in the table is updated with the information available the last time this page and the Cloud-Delivered Firewall Management Center were synchronized. Synchronization happens every 10 minutes.
- **Deployment**: Takes you to the device configuration deployment page on Cloud-Delivered Firewall Management Center. Refer to Deploy Configuration Changes.
- **Workflows**: Takes you to the **Workflows** page to monitor every process that Security Cloud Control runs when communicating with devices. Refer to Workflows page.
- **API Explorer**: Takes you to the page that lists the Cloud-Delivered Firewall Management Center REST APIs. Refer to Secure Firewall Management Center REST API Guide .
- **Unified Events**: Takes you to the **Unified Events** page on the Cloud-Delivered Firewall Management Center portal, which provides a single-screen view of various firewall events, including connection, intrusion, file, malware, and security-related connection events. For more information, refer to Unified Events .

Note The Unified Events feature requires activation. If you have not yet activated this feature, contact your Cisco sales representative to enable it.

Management:

- **Devices**: Takes you to the Firewall Threat Defense device listing page on the Cloud-Delivered Firewall Management Center portal. Refer to Configure Devices.
- **Policies**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to edit system-provided access control policies and create custom access control policies. Refer to Manage Access Control Policies.

- **Objects**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to manage reusable objects. Refer to Object Management.
- **NAT**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to configure Network Address Translation policies on the Firewall Threat Defense devices. Refer to Manage NAT policies.
- **Site to Site VPN**: Takes you to the site-to-site VPN dashboard page on the Cloud-Delivered Firewall Management Center portal to configure site-to-site VPN policy between two sites. Refer to Site-to-Site VPNs.
- **Remote Access VPN**: Takes you to the remote access VPN dashboard page on the Cloud-Delivered Firewall Management Center portal to configure a remote access VPN configuration. Refer to Remote Access VPN.
- **Platform Settings**: Takes you to the platform settings page on the Cloud-Delivered Firewall Management Center portal to configure a range of unrelated features whose values you might want to share among several devices. Refer to Platform Settings.

System:

- **Configuration**: Takes you to the system configuration settings page on the Cloud-Delivered Firewall Management Center portal to configure system configuration settings. Refer to System Configuration .
- **Smart Licenses**: Takes you to the smart licenses page on the Cloud-Delivered Firewall Management Center portal to assign licenses to devices. Refer to Assign Licenses to Devices.
- **AMP Management**: Takes you to the AMP management page on the Cloud-Delivered Firewall Management Center portal that supplies data the system uses to detect and block malware on your network. Refer to Cloud Connections for Malware Protection.
- **Device Health**: Takes you to the health monitoring page on the Cloud-Delivered Firewall Management Center portal, which tracks various health indicators to ensure the hardware and software in the system are working correctly. Refer to About Health Monitoring.
- **Audit**: Takes you to the audit log page on the Cloud-Delivered Firewall Management Center portal to show the generated audit record for each user interaction with the web interface.
- **Cisco Cloud Events**: Takes you to the configure Cisco Cloud events page on the Security Cloud Control portal to configure Cloud-Delivered Firewall Management Center to send events directly to SAL (SaaS). Refer to Send Events to SAL (SaaS).

After you open the Cloud-Delivered Firewall Management Center page, click the blue question mark button and select **Page-level Help** for more information.

Support to open Security Cloud Control and Cloud-Delivered Firewall Management Center applications in separate tabs

As you configure Firewall Threat Defense devices or objects in Cloud-Delivered Firewall Management Center , you can open the appropriate configuration pages in additional browser tabs to work simultaneously in the Security Cloud Control and the Cloud-Delivered Firewall Management Center portals without logging off.

For example, you can create an object on Cloud-Delivered Firewall Management Center and simultaneously monitor event logs on Security Cloud Control that are generated from the security policies.

This feature is available for all Security Cloud Control links that navigate to the Cloud-Delivered Firewall Management Center portal. To open the Cloud-Delivered Firewall Management Center portal in a new tab:

On the Security Cloud Control portal, press and hold the Ctrl (Windows) or Command (Mac) button, then click the corresponding link.



Note A single click opens the Cloud-Delivered Firewall Management Center page in the same tab.

Here are some examples of opening the Cloud-Delivered Firewall Management Center portal page in a new tab:

- Choose **Administration** > **Firewall Management Center** and select **Cloud-Delivered FMC**. In the right pane, press and hold the Ctrl (Windows) or Command (Mac) button, and then click the page that you want to access.
- Choose **Objects** > **Other FTD Objects**.
- Click the search icon on the Security Cloud Control page and enter your search terms in the search field.

  From the search result, press and hold the Ctrl (Windows) or Command (Mac) button, and then click the arrow icon.
- Choose **Dashboard** > **Quick Actions**. Press and hold the Ctrl (Windows) or Command (Mac) button, and then click **Manage FTD Policies** or **Manage FTD Objects**.



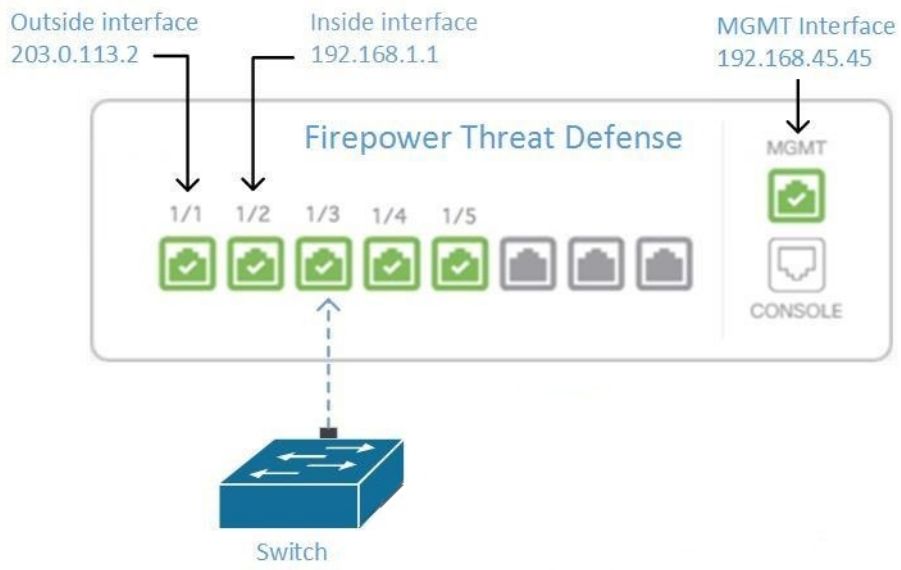
Note If you switch to a new Security Cloud Control tenant, the Cloud-Delivered Firewall Management Center portal open in another tab logs out automatically.

Networking Requirements

Managing an FDM-Managed Device from the Inside Interface

Managing an FDM-managed device using the inside interface may be desirable if the dedicated MGMT interface is assigned an address that is not routable within your organization; for example, it might only be reachable from within your data center or lab.

Figure 1: Interface Addresses



Remote Access VPN Requirement

If the FDM-managed device you manage with Security Cloud Control will be managing Remote Access VPN (RA VPN) connections, Security Cloud Control must manage the device using the inside interface.

What to do next:

Continue to Manage an FDM-Managed Device from the Inside Interface, on page 16 for the procedure for configuring the FDM-managed device.

Manage an FDM-Managed Device from the Inside Interface

This configuration method:

- Assumes that the FDM-managed device has not been on-boarded to Security Cloud Control.
- Configures a data interface as the inside interface.
- Configures the inside interface to receive MGMT traffic (HTTPS).
- Allows the address of the cloud connector to reach the inside interface of the device.

Before you begin

Review the prerequisites for this configuration in these topics:

- Managing an FDM-Managed Device from the Inside Interface, on page 15
- Allow inbound access for direct cloud connectivity , on page 166

Procedure

Step 1 Log in to the Secure Firewall Device Manager.

Step 2 In the **System Settings** menu, click **Management Access**.

Step 3 Click the **Data Interfaces** tab and click **Create Data Interface**.

a. In the **Interface** field, select the pre-named "**inside**" interface from the list of interfaces.

b. In the **Protocols** field, select **HTTPS** if it is not already.

c. In the **Allowed Networks** field, select the network objects that represent the networks inside your organization that will be allowed to access the inside address of the FDM-managed device. The IP address of the SDC or cloud connector should be among the addresses allowed to access the inside address of the device.

In the Interface Addresses diagram, the SDC's IP address, 192.168.1.10 should be able to reach 192.168.1.1.

Step 4 **Deploy the change**. You can now manage the device using the inside interface.

What to do next:

What if you are using a Cloud Connector?

Use the procedure above and add these steps:

- Add a step to "NAT" the outside interface to (203.0.113.2) to the inside interface (192.168.1.1). See Interface Addresses.
- In step 3c of the procedure above, your "Allowed Network" is a network group object containing the public IP addresses of the cloud connector.
- Add a step that creates an Access Control rule allowing access to the outside interface (203.0.113.2) from the public IP addresses of the cloud connector. See for a list of all the Cloud Connector IP addresses for the various Security Cloud Control regions.

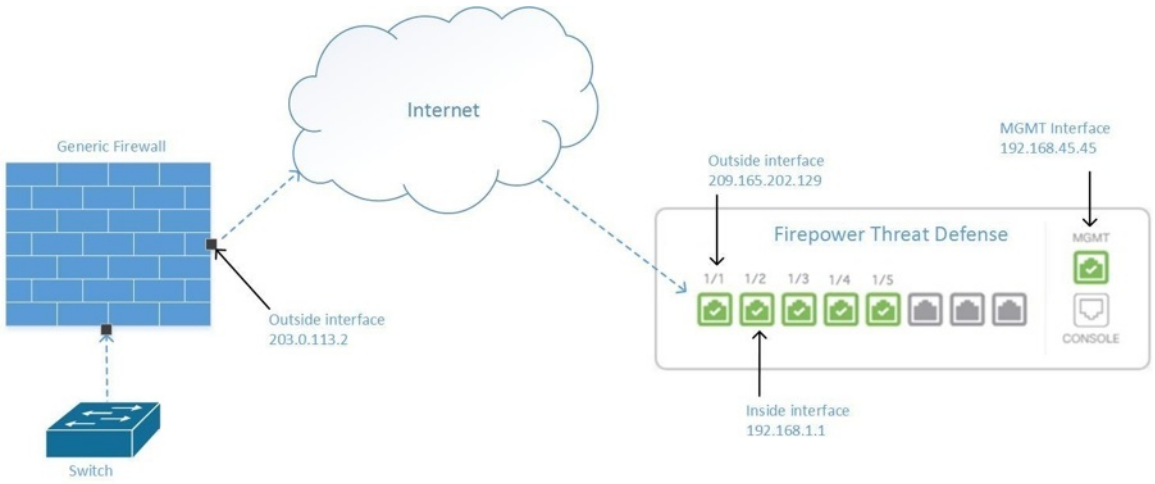
Onboard the FDM-Managed Device

The recommended way of onboarding the FDM-managed device to Security Cloud Control is to use the registration token onboarding approach. After you configure the inside interface to allow management access from the Cloud Connector to the FDM-managed device, onboard the FDM-managed device with the user name and password.

Managing an FDM-Managed Device from the Outside Interface

Managing an Cloud-Delivered Firewall Management Center device from the outside interface may be desirable if you have one public IP address assigned to a branch office and Security Cloud Control is managed using a Cloud Connector at another location.

Figure 2: Device Management on Outside Interface



This configuration doesn't mean that the physical MGMT interface is no longer the device's management interface. If you were in the office where the Cloud-Delivered Firewall Management Center device was located, you would be able to connect to the address of the MGMT interface and manage the device directly.

Remote Access VPN Requirement

If the device you manage with Cloud-Delivered Firewall Management Center will be managing Remote Access VPN (RA VPN) connections, Cloud-Delivered Firewall Management Center will not be able to manage the Cloud-Delivered Firewall Management Center device using the outside interface. See Managing an FDM-Managed Device from the Inside Interface instead.

What to do next:

Continue to Manage the FDM-Managed Device's Outside Interface, on page 18 for the procedure for configuring the Cloud-Delivered Firewall Management Center device.

Manage the FDM-Managed Device's Outside Interface

This configuration method:

1. Assumes that the FDM-managed device has not been on-boarded to Security Cloud Control.
2. Configures a data interface as the outside interface.
3. Configures management access on the outside interface.
4. Allows the public IP address of the cloud connector (after it has been NAT'd through the firewall) to reach the outside interface.

Before you begin

Review the prerequisites for this configuration in these topics:

- Manage the FDM-Managed Device's Outside Interface, on page 18

- Allow inbound access for direct cloud connectivity , on page 166

Procedure

Step 1 Log in to the Secure Firewall Device Manager.

Step 2 In the **System Settings** menu, click **Management Access**.

Step 3 Click the **Data Interfaces** tab and click **Create Data Interface**.

a. In the **Interface** field, select the pre-named "**outside**" interface from the list of interfaces.

b. In the **Protocols** field, select **HTTPS** if it is not already. Security Cloud Control only needs HTTPS access.

c. In the **Allowed Networks** field, create a host network object containing the public-facing IP address of the cloud connector after it gets NAT'd through the firewall.

In the Device Management from Outside Interface network diagram, the cloud connector's IP address, 10.10.10.55, would be NAT'd to 203.0.113.2. For the Allowed Network, you would create a host network object with the value 203.0.113.2.

Step 4 Create an Access Control policy in Secure Firewall Device Manager that allows management traffic (HTTPS) from the public IP address of the SDC or cloud connector, to the outside interface of your FDM-managed device. In this scenario, the source address would be 203.0.113.2 and the source protocol would be HTTPS; the destination address would be 209.165.202.129 and the protocol would be HTTPS.

Step 5 **Deploy the change**. You can now manage the device using the outside interface.

What to do next:

What if you are using a cloud connector?

The process is very similar, except for two things:

- In step 3c of the procedure above, your "Allowed Network" is a network group object containing the public IP addresses of the cloud connector. See Connecting Devices to Security Cloud Control Through the Cloud Connector for a list of Cloud Connector IP addresses for the various Security Cloud Control regions.
- In step 4 of the procedure above, you create an Access Control rule that allows access to the outside interface from the public IP addresses of the cloud connector.

Get started with Security Cloud Control

Get started with Security Cloud Control is an intuitive interface that guides you through sequential tasks for efficiently setting up and configuring your firewalls.

Sign in to Security Cloud Control, and in the top menu, click ().

The **On-premises management** page is displayed and has links to perform these tasks:

- Onboard the Firewall Threat Defense device to the on-premises Firewall Management Center using Security Cloud Control.
- Migrate a Firewall Threat Defense device that is managed by an on-premises Firewall Management Center to the Cloud-Delivered Firewall Management Center.
- Perform bulk provisioning of multiple threat defense devices to the Cloud-Delivered Firewall Management Center using device templates.
- Analyze your policies, detect anomalies, and receive curated remediation recommendations.

The **Manage firewalls** page is displayed and has links to perform these tasks:

- Onboard and manage Firewall Threat Defense, Cisco Secure Firewall ASA, and Meraki MX firewalls.
- Set up a site-to-site VPN connection.
- Leverage the Cisco AI Assistant to manage firewall policies and access-related documentation when needed.
- Subscribe to receive notifications for troubleshooting common issues.

The **Protect cloud assets** page is displayed and has links to perform these tasks:

- Safeguard your cloud assets by protecting data and applications across multicloud environments with consistent security measures using Multicloud Defense.

Security Cloud Control Firewall Management licenses

Security Cloud Control Firewall Management requires a base subscription for organization entitlement and device licenses for managing devices. You can buy one or more Security Cloud Control Firewall Management base subscriptions based on the number of tenants you require and device licenses based on the device model number and the quantity. In other words, purchasing the base subscription provides you with a Security Cloud Control Firewall Management organization. For every device you choose to manage using Security Cloud Control Firewall Management, you need separate device licenses.

For the purposes of planning your deployment, note that each Security Cloud Control Firewall Management tenant can manage approximately 500 devices through the Secure Device Connector (SDC) and any number of devices using the cloud connector. See Secure Device Connector (SDC) for more information.

To onboard and manage devices from Security Cloud Control Firewall Management, you must purchase a base subscription and device-specific, term-based subscriptions based on the devices you want to manage.

Subscriptions

Security Cloud Control Firewall Management subscriptions are term-based:

- **Base**: Offers subscriptions for one, three, and five years, and provides entitlement to access the Security Cloud Control Firewall Management organization and onboard adequately licensed devices.
- **Device License**: Offers subscriptions for one, three, and five years for any supported device you choose to manage. For example, you can choose to manage a Cisco Firepower 1010 device using Security Cloud Control Firewall Management for three years if you purchase a three-year software subscription for the Cisco Firepower 1010 device.

See Software and Hardware Supported by Security Cloud Control Firewall Management for more information on Cisco security devices that Security Cloud Control Firewall Management supports.

When managing your firewalls with Security Cloud Control Firewall Management, you can combine Security Analytics and Logging with your Security Cloud Control Firewall Management subscription, or you can obtain Security Analytics and Logging entitlement as a separate subscription. For more information about Security Analytics and Logging subscriptions, see Security Analytics and Logging licenses, on page 673.

Important You do not require two separate device licenses to manage a high-availability device pair in Security Cloud Control Firewall Management. If you have a Secure Firewall ASA (ASA)Secure Firewall Threat Defense (FTD) high-availability pair, purchasing one ASAFTD device license is sufficient because Security Cloud Control Firewall Management considers the pair of high-availability devices as one single device.

Note

- Catalyst SD-WAN does not require an additional license for integration with Security Cloud Control Firewall Management. Customers with Cisco Digital Network Architecture (DNA) or WAN Essentials licenses can use these existing licenses for integration without needing any other license.
-

Note You cannot manage Security Cloud Control Firewall Management licensing through the Cisco Smart Licensing portal.

Software Subscription Support

The Security Cloud Control Firewall Management base subscription includes software subscription support that is valid for the term of the subscription and provides access to software updates, major upgrades, and Cisco Technical Assistance Center (TAC) at no extra cost. While software support is selected by default, you can also leverage Security Cloud Control Firewall Management solution support based on your requirement.

Cloud-Delivered Firewall Management Center licensing and registration

Register Cloud-Delivered Firewall Management Center with Cisco Smart Licensing the same way you would for On-Premises Firewall Management Center.

Overview

Cloud-Delivered Firewall Management Center is included with the base subscription and trial for Security Cloud Control Firewall Management. You do not need to purchase a separate license for Cloud-Delivered Firewall Management Center. The base subscription or trial covers Cloud-Delivered Firewall Management Center, enabling you to manage Firewall Threat Defense devices through the cloud.

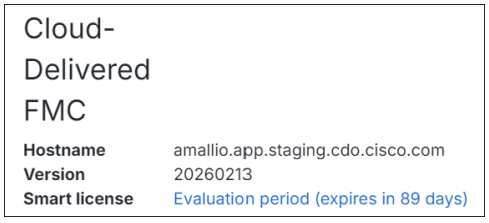
Cloud-Delivered Firewall Management Center is provisioned with a 90-day evaluation license upon deployment.

Important We strongly recommend registering Cloud-Delivered Firewall Management Center with Cisco Smart Software Manager immediately after deployment to access all features, including those requiring export encryption such as RAVPN and SSL VPN. Early registration prevents feature limitations and deployment interruptions.

Evaluation license

- Features requiring export encryption, such as Remote Access VPN, SSL VPN, and other encryption-dependent options, remain disabled until you register Cloud-Delivered Firewall Management Center with Cisco Smart Software Manager (CSSM).
- After the 90-day evaluation period ends, you can continue onboarding Firewall Threat Defense devices, but manually triggered or scheduled deployments are blocked until registration with CSSM is completed.
- Security Cloud Control Firewall Management sends alert notifications as the evaluation license nears expiration.

Note The **Smart license** field displays a warning when the evaluation license is expiration.



When the evaluation period ends, Cloud-Delivered Firewall Management Center is unregistered. Registering Cloud-Delivered Firewall Management Center with Cisco Smart Software Manager converts from evaluation mode to a fully licensed state.

Click the evaluation warning link to open the smart licensing registration page and register Cloud-Delivered Firewall Management Center with Cisco Smart Software Manager.

Registration with Cisco Smart Software Manager (CSSM)

- Connect Cloud-Delivered Firewall Management Center to your smart licensing account, following the same process as On-Premises Firewall Management Center. The high-level procedure is provided in this section.
- No separate license purchase is needed for Cloud-Delivered Firewall Management Center; the license is automatically applied upon registration.
- Registering with smart licensing enables encryption export features.
- Registration ensures compliance and prevents deployment issues.

To learn how to get a Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant, see Request a Cloud-Delivered Firewall Management Center for your Security Cloud Control Tenant.

Licensing for Firewall Threat Defense devices

- No separate license purchase is needed for Cloud-Delivered Firewall Management Center.
- Each Firewall Threat Defense device managed by Cloud-Delivered Firewall Management Center requires an individual license.
- After registering Cloud-Delivered Firewall Management Center with CSSM, an administrator may apply feature licenses to security devices.

Step-by-step registration

A high-level procedure is provided here. For detailed steps, see Register the Management Center with the Smart Software Manager.

1. Create or Access Your Smart Account:

   Ensure you have a Cisco Smart Software Manager account. If you do not have one, create it at Smart Software Manager.

2. Generate a Registration Token or Use a Registration Token:

   In the Smart Software Manager, use an existing valid registration token or generate a registration token for the virtual account to which you want to register the Cloud-Delivered Firewall Management Center.

   a. Navigate to **Inventory > New Token**.

   b. Enter a description and set an expiration (Cisco recommends 30 days).

   c. Create and copy the token.

3. Register Cloud-Delivered Firewall Management Center with the Token:

   a. Log in to the Cloud-Delivered Firewall Management Center interface.

   b. Navigate to **System > Licenses > Smart Licenses**.

   c. Click **Register** and paste the registration token into the **Product Instance Registration Token** field.

   d. Ensure there are no extra spaces or blank lines before or after the token.

   e. Click **Apply Changes**.

4. Verify Registration:

   After registration, verify the license status under **System > Licenses > Smart Licenses** to confirm successful registration, license application, and that “Export-Controlled Features” are enabled.

Introduction to objects

An object is a reusable container of information that you can use in one or more security policies. Objects help you maintain policy consistency because you can define a value once, use it in multiple policies, and update every policy that uses the object by changing the object.

When you onboard a device, Security Cloud Control Firewall Management recognizes all the objects used by that device, saves them, and lists them on the **Objects** page. From the **Objects** page, you can edit existing objects and create new ones to use in your security policies.

Security Cloud Control Firewall Management calls an object used on multiple devices a **shared object** and identifies them in the **Objects** page with this badge .

You can use Security Cloud Control Firewall Management to manage objects in these ways:

- Search for and filter all your objects based on a variety of criteria.
- Find duplicate, unused, and inconsistent objects, and then consolidate, delete, resolve, ignore, or unignore object issues.
- Find and delete unassociated objects if they are not needed.
- Discover objects that are shared across devices.
- Evaluate which policies and devices are affected before you commit an object change.
- Compare a set of objects and their relationships with different policies and devices.
- Capture objects that are in use after a device is onboarded to Security Cloud Control Firewall Management.

Sometimes a shared object develops some "issue" and is no longer perfectly shared across multiple policies or devices:

- **Duplicate objects**: Two or more objects on the same device have different names but the same values. These objects usually serve similar purposes and are used by different policies. Duplicate objects are identified by this issue icon:
- **Inconsistent objects**: Two or more devices have objects with the same name but different values. This issue can occur when objects start with the same name and content but later diverge. Inconsistent objects are identified by this issue icon:
- **Unused objects**: An object exists in a device configuration but is not referenced by another object, an access list, or a NAT rule. Unused objects are identified by this issue icon:

You can also create objects for immediate use in rules or policies. You can create an object that is unassociated with any rule or policy. When you use that unassociated object in a rule or policy, Security Cloud Control Firewall Management creates a copy of it and uses the copy.

You can view the objects managed by Security Cloud Control Firewall Management by navigating to the **Objects** menu or by viewing them in the details of a network policy.

If you have issues with creating, editing, or reading objects from an onboarded device, see Troubleshoot Security Cloud Control, on page 829 for more information.

Supported object types

The object types that you can create and manage depend on the managed device type.

Common object types

Table 2: Common Objects

Object Type	Description
Network	Network groups and network objects (collectively referred to as network objects) define the addresses of hosts or networks.
URL	Use URL objects and groups (collectively referred to as URL objects) to define the URL or IP addresses of web requests. You can use these objects to implement manual URL filtering in access control policies or blocking in Security Intelligence policies.

ASA object types

Table 3: Adaptive Security Appliance (ASA) Object Types

Object	Description
Network	Defines host or network addresses. This category includes network objects and network groups.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.
Time Range	Defines a start time, an end time, and optional recurring entries for time-based access to features or assets.
Trustpoints	Manages and tracks digital certificates in ASA.

FDM-managed device object types

Table 4: FDM-Managed Device Object Types

Object	Description
AnyConnect Client Profile	Represents files used in configurations, typically for remote access VPN policies. These objects can contain AnyConnect Client Profile and AnyConnect Client Image files.

Object	Description
Certificate Filter	Provides digital identification for authentication. Certificates are used for SSL, TLS, and DTLS connections, such as HTTPS and LDAPS.
DNS Group	Defines DNS servers that resolve fully qualified domain names (FQDNs), such as www.example.com, to IP addresses. You can configure different DNS group objects for management and data interfaces.
Geolocation	Defines countries and continents that host the source or destination of traffic. You can use geolocation objects in policies instead of IP addresses.
IKEv1 Policy	Contains the parameters required for IKEv1 policies when defining VPN connections.
IKEv2 Policy	Contains the parameters required for IKEv2 policies when defining VPN connections.
IKEv1 IPSEC Proposal	IPsec Proposal objects configure the IPsec proposal used during IKE Phase 1 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.
IKEv2 IPSEC Proposal	IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.
Network	Defines host or network addresses. This category includes network objects and network groups.
Security Zone	Groups interfaces into network segments that help classify and manage traffic.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.
SGT Group	Identifies source or destination addresses based on a security group tag (SGT) assigned by Cisco ISE.
Syslog Server	Identifies a server that can receive connection-oriented or diagnostic syslog messages.
URL	Defines URLs or IP addresses for web requests. URL objects and URL groups can be used for manual URL filtering in access control policies or blocking in Security Intelligence policies.

On-Premises Firewall Management Center object types

Table 5: On-Premises Secure Firewall Management Center Object Types

Object	Description
Network	Defines host or network addresses. This category includes network objects and network groups.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.

Shared objects

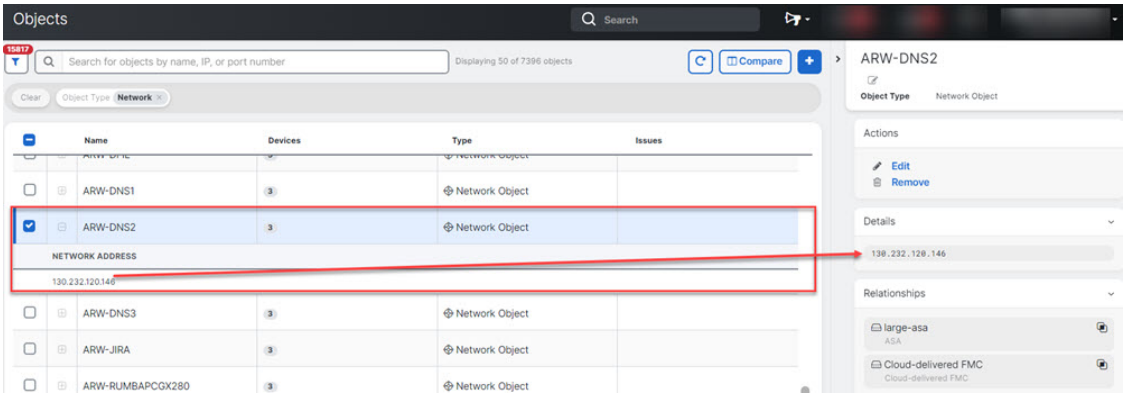
A shared object is an object on multiple devices that has the same name and the same contents. Shared objects help you maintain policies because one object change affects every policy that uses that shared object.

Shared objects are identified by this icon



on the **Objects** page. Shared objects make it easy to maintain policies because you can modify an object in one place and that change affects all the other policies that use that object. Without shared objects, you would need to modify all the policies individually that require the same change.

When looking at a shared object, Security Cloud Control shows you the contents of the object in the object table. Shared objects have exactly the same contents. Security Cloud Control shows you a combined or "flattened" view of the elements of the object in the details pane. Notice that in the details pane, the network elements are flattened into a simple list and not directly associated with a named object.



Object Overrides

An object override lets you customize a shared object for specific devices. When a device has an override, Security Cloud Control Firewall Management uses the override value for that device instead of the object's default value.

Overrides allow you to maintain a single shared policy across devices while tailoring individual object values where needed.

Use overrides when you want to maintain one shared policy across devices but need specific devices to use different object values. For example, a shared print-server object can use the default value 10.1.1.100 for most offices, while Office B uses an override value of 10.2.1.100.

Overrides on network object groups

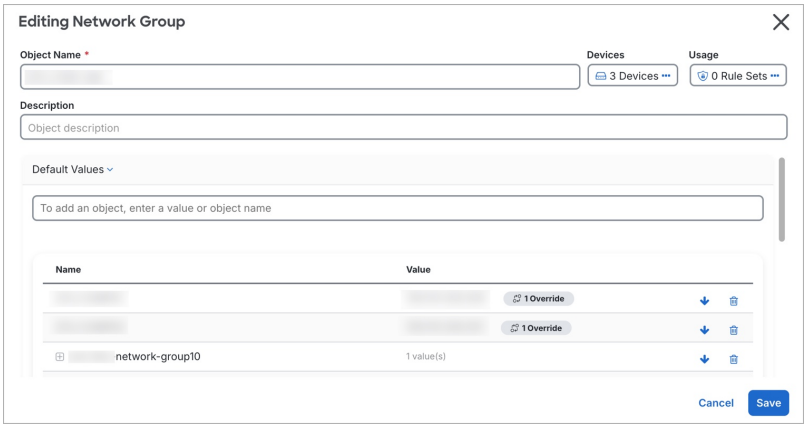
For network object groups, overrides fully replace the default values for the devices that are assigned to the override. A device with an override receives only the override values, not the default values.

This replacement behavior has these effects:

- Changes to default values affect only devices without overrides.
- Changes to an override affect only the devices assigned to that override.
- If a device needs the default values plus a local value, add all required values to the override.

For example, a shared dns-servers network group contains default values primary-dns (10.0.1.53) and secondary-dns (10.0.2.53) for Branch A, Branch B, and Branch C. Branch C also needs local-dns-cache (10.30.1.53). Because a network group override replaces the defaults, the Branch C override must contain primary-dns, secondary-dns, and local-dns-cache.

If you later add a default value, such as tertiary-dns, Branch A and Branch B receive the new default value automatically. Branch C does not receive it until you add tertiary-dns to the Branch C override.



Unassociated objects

An unassociated object is not associated with any rule or policy. When you use an unassociated object in a rule or policy, Security Cloud Control Firewall Management creates and uses a copy of that object. The original unassociated object remains available until a nightly maintenance job deletes it or you delete it manually.

Security Cloud Control Firewall Management keeps unassociated objects as a copy so that configuration data is not lost if the related rule or policy is deleted accidentally.

To view unassociated objects, choose **Objects** > , and check **Unassociated**.

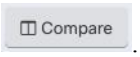
Compare objects

Use object comparison to review up to three objects side by side and inspect their details and relationships.

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Filter the objects on the page to find the objects you want to compare.

Step 3 Click the **Compare** button 

.

Step 4 Select up to three objects.

Step 5 Review the objects side-by-side at the bottom of the screen.

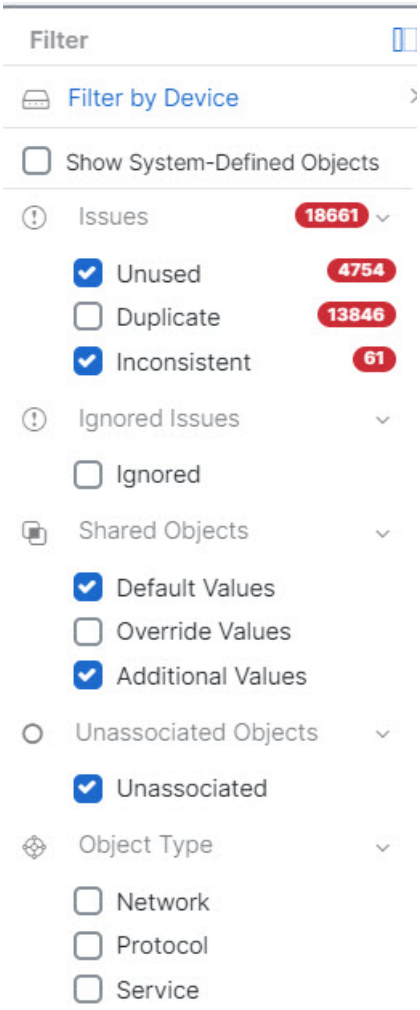
Step 6 (Optional) In **Relationships**, select a device name, and then select **View Configuration** to view the device configuration with the object entry highlighted.

Object filters

Use filters on the **Objects** page to find objects by device, issue, shared state, association state, object type, or search value. You can also include or exclude system-defined objects.

The object type filter lets you filter by object types such as network object, network group, URL object, URL group, service object, and service group. The shared objects filter lets you filter objects that have default values, override values, or additional values.

You can combine device and object filters to create focused search strategies. For example, you can search for objects that match this logic: **Issues** is **Unused** OR **Inconsistent**, AND **Shared Objects** has **Default Values** OR **Additional Values**, AND **Unassociated Objects** is selected.



To filter, click in the left-hand pane of the Objects tab:

- **Filter by Device**: Shows objects found on selected devices.
- **Show System-Defined Objects**: Includes predefined system objects in search and filter results. System objects cannot be edited or deleted. Some devices come with predefined objects for common services. These system objects are convenient because they are already made for you and you can use them in your rules and policies. There can be many system objects in the objects table. System objects cannot be edited or deleted.
- **Issues**: Shows unused, duplicate, or inconsistent objects. If you select more than one issue, objects in any selected issue category are included.
- **Ignored Issues**: Shows objects whose issues were ignored by an administrator.
- **Shared Objects**: Shows shared objects. You can filter by default values, override values, additional values, or a combination.
- **Unassociated Objects**: Shows objects that are not associated with any rule or policy.

- **Object Type**: Shows selected object types, such as network objects, network groups, URL objects, URL groups, service objects, and service groups.

Within a main filter, subfilters can further narrow the results by object type, such as Network, Service, or Protocol. Filters across categories combine with an AND relationship. Multiple selections within a category can combine with an OR relationship.

For example, a filter set can search for objects that match this logic: objects on selected devices AND inconsistent objects AND network objects or service objects AND object names that contain **group**.

Configure object filters

You can filter on as few or as many criteria as you want. The more categories you filter by, the fewer results you should expect.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Open the filter panel by clicking the filter icon at the top of the page. Uncheck any filters that have been checked to make sure no objects are inadvertently filtered out.

Step 3 If you want to restrict your results to those found on particular devices:

a. Click **Filter By Device**.

b. Search all the devices or click a device tab to search for only devices of a certain kind.

c. Check the device you want to include in your filter criteria.

d. Click **OK**.

Step 4 Check **Show System Objects** to include system objects in your search results. Uncheck **Show System Objects** to exclude system objects from your search results.

Step 5 Check the object **Issues** you want to filter. If you check more than one issue, objects in any of the categories you check are included in your filter results.

Step 6 Check **Ignored** issues if you want to see the object that had issues but was ignored by the administrator.

Step 7 Check the required filter in **Shared Objects** if you are filtering for objects shared between two or more devices.

- **Default Values**: Filters objects having only the default values.
- **Override Values**: Filters objects having overridden values.
- **Additional Values**: Filters objects having additional values.

Step 8 Check **Unassociated** if you are filtering for objects that are not part of any rule or policy.

Step 9 Check the **Object Types** you want to filter.

Step 10 You can also add an object name, IP address, or port number to the Objects search field to find objects with your search criteria among the filtered results.

Exclude device filters when you need full relationships

When you filter by device, Security Cloud Control Firewall Management shows objects on that device but does not show the object's relationships to all other devices.

For example, if ObjectA is shared between ASA1 and ASA2, and you filter for shared objects on ASA1, Security Cloud Control Firewall Management shows `ObjectA`, but the **Relationships** pane shows only that ObjectA is on ASA1.

To view every device and policy relationship for an object, do not specify a device in the filter criteria. Filter by other criteria, select the object, and review the **Relationships** pane.

Unignore objects

Unignore Objects refers to the process of reversing the action of ignoring certain objects that have been marked as unused, duplicate, or inconsistent. Ignoring objects is a way to temporarily leave unresolved issues with these objects when there are valid reasons. However, if you later decide to address these ignored objects, you can unignore them to bring them back into view and take action.

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 In the **Object** table, select the object you want to unignore. You can unignore one object at a time.

Step 3 Click **Unignore** in the details pane.

Step 4 Confirm your request. Now, when you filter your objects by issue, you should find the object that was previously ignored.

Delete objects

You can delete a single object or mulitple objects.

Delete a single object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to delete by using object filters and the search field, and select it.

Step 3 Review the **Relationships** pane. If the object is used in a policy or in an object group, you cannot delete the object until you remove it from that policy or group.

Step 4 In the **Actions** pane, click the **Remove** icon .

Step 5 Confirm that you want to delete the object by clicking **OK**.

Step 6 Review and deploy the changes you made, or wait and deploy multiple changes at once.

Delete a group of unused objects

As you onboard devices and start resolving object issues, you find many unused objects. You can delete up to 50 unused objects at a time.

Procedure

Step 1 Use the **Issues** filter to find **unused** objects. You can also use the Device filter to find objects that are not associated with a device by selecting **No Device**.

Step 2 Check the **Select all** checkbox in the object table header to select all the objects found by the filter that appear in the object table; or, check individual checkboxes for individual objects you want to delete.

Step 3 In the **Actions** pane, click the **Remove** icon .

Step 4 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Network objects

A network object can contain a host name, a network IP address, a range of IP addresses, a fully qualified domain name (FQDN), or a subnetwork expressed in CIDR notation. **Network groups** are collections of network objects and other individual addresses or subnetworks that you add to the group. Network objects and network groups are used in access rules, network policies, and NAT rules.

Not all platforms support network objects, such as Cisco Meraki and Multicloud Defense; when you share dynamic objects, Security Cloud Control Firewall Management automatically translates the appropriate information from the originating platform or device into a set of usable information that Security Cloud Control Firewall Management can use.

Table 6: Permitted Values of Network Objects

Device type	IPv4 / IPv6	Single Address	Range of addresses	Fully Qualified Domain Name	Subnet using CIDR Notation
ASA	IPv4 and IPv6	Yes	Yes	Yes	Yes

Device type	IPv4 / IPv6	Single Address	Range of addresses	Fully Qualified Domain Name	Subnet using CIDR Notation
FTD	IPv4 and IPv6	Yes	Yes	Yes	Yes
Multicloud Defense	IPv4 and IPv6	Yes	Yes	Yes	Yes

Table 7: Permitted Contents of a Network Group

Device type	IP Value	Network Object	Network Groups
ASA	Yes	Yes	Yes
FTD	No	Yes	Yes
Multicloud Defense	Yes	Yes	Yes

Reuse network objects across products

If you have a Security Cloud Control tenant with a Cloud-Delivered Firewall Management Center and one or more on-premises Firewall Management Centers onboarded to your tenant:

- When you create a Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, ASA, or Meraki network object or group, a copy of the object is also added to the objects list on the **Objects** page used when configuring Cloud-Delivered Firewall Management Center, and vice versa.
- When you create a Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, or ASA network object or group, an entry is created in the **Devices with Pending Changes** page for each On-Premises Firewall Management Center for which **Discover & Manage Network Objects** is enabled. From this list, you can choose and deploy the object to the on-premises Firewall Management Center on which you want to use the object and discard the ones that you do not want. Navigate **Tools & Services** > **Firewall Management Center**, **Administration** > **Firewall Management Center** select the on-premises Firewall Management Center, and click **Objects** to see your objects in the On-Premises Firewall Management Center user interface and assign them to policies.

Changes you make to network objects or groups on either page apply to the object or group instance on both pages. Deleting an object from one page also deletes the corresponding copy of the object from the other page.

The following exceptions apply:

- If a network object of the same name already exists for Cloud-Delivered Firewall Management Center, the new Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, ASA, or Meraki network object will not be replicated on the **Objects** page of Security Cloud Control.
- Network objects and groups in onboarded Firewall Threat Defense devices that are managed by on-premises Secure Firewall Management Center are not replicated and cannot be used in Cloud-Delivered Firewall Management Center.

  Note that for on-premises Secure Firewall Management Center instances that have been *migrated* to Cloud-Delivered Firewall Management Center, network objects and groups *are* replicated to the Security Cloud Control objects page if they are used in policies that were deployed to FTD devices.
- Sharing Network Objects between Security Cloud Control and Cloud-Delivered Firewall Management Center is automatically enabled on new tenants but must be requested for existing tenants. If your network

objects are not being shared with Cloud-Delivered Firewall Management Center, contact TAC to have the features enabled on your tenant.

- Sharing network objects between Security Cloud Control and On-Premises Firewall Management Center is not automatically enabled on Security Cloud Control for new on-premises Firewall Management Centers onboarded to Security Cloud Control. If your network objects are not being shared with On-Premises Firewall Management Center, ensure the **Discover & Manage Network Objects** toggle button is enabled for the on-premises Firewall Management Center in **Settings** or contact TAC to have the features enabled on your tenant.

Viewing network objects

Network objects that you create in Security Cloud Control Firewall Management, and network objects that Security Cloud Control Firewall Management recognizes in onboarded device configurations, appear on the **Objects** page. They are labeled with their object type. This allows you to filter by object type to quickly find the object you are looking for.

When you select a network object, the **Details** pane shows the object values. The **Relationships** pane shows whether the object is used in a policy and which device stores the object.

When you select a network group, Security Cloud Control Firewall Management shows the contents of the group as the combined values from the network objects in that group.

Create or Edit ASA Network Objects and Network Groups

An ASA network object can contain a hostname, an IP address, or a subnet address expressed in CIDR notation. **Network groups** are conglomerates of network objects, network groups, and IP addresses that are used in access rules, network policies, and NAT rules. You can create, read, update, and delete network objects and network groups using Security Cloud Control.

Table 8: Permitted Values of ASA Network Objects and Groups

Device type	IPv4 / IPv6	Single Address	Range of addresses	Partially Qualified Domain Name (PQDN)	Subnet using CIDR Notation
ASA	IPv4 / IPv6	Yes	Yes	Yes	Yes

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Create an ASA Network Object

A network object can contain a host name, a network IP address, a range of IP addresses, a fully qualified domain name (FQDN), or a subnetwork expressed in CIDR notation. Network objects are used in access rules, network policies, and NAT rules. You can create, update, and delete network objects and network groups using Security Cloud Control.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **ASA** > **Network**.

Step 4 Enter an object name.

Step 5 Select **Create a network object**.

Step 6 (optional) Enter an object description.

Step 7 In the **Value** section, add the IP address information in one of these ways:

- Select **eq** and then enter a single IP address, a subnet address using CIDR notation, or a Partially Qualified Domain Name (PQDN).
- Select **range** and then enter a range of IP addresses. Enter the range with the beginning and ending address in the range separated by a space. For example, 10.1.1.1 10.1.1.255 or 2001:DB8:1::1 2001:DB8:1::3

Step 8 Click **Add**.

Important
The newly created network objects aren't associated with any ASA device as they aren't part of any rule or policy. To see these objects, select the **Unassociated** objects category in object filters.

Create an ASA Network Group

A **network group** can contain IP address values, network objects, and network groups. When you are creating a new network group, you can search for existing objects by their name, IP addresses, IP address range, or FQDN and add them to the network group. If the object isn't present, you can instantly create that object in the same interface and add it to the network group. Network groups can contain both IPv4 and IPv6 addresses.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **ASA** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network group**.

Step 6 (optional) Enter an object description.

Step 7 In the **Values** field, enter a value or object name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 8 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 9 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 10 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the check mark to save it.

- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the check mark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the check mark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Note
You can click the edit icon to modify the details. Clicking the delete button doesn't delete the object itself; instead, it removes it from the network group.

Step 11 After adding the required objects, click **Add** to create a new network group.

Step 12 Preview and deploy configuration changes for all devices, on page 597.

Edit an ASA Network Object



Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the network object and click the edit icon  in the **Actions** pane.

Step 4 Edit the values in the dialog box in the same fashion that you created in the procedures above.

Note
Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Edit an ASA Network Group

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the network group you want to edit by using object filters and search field.

Step 3 Select the network group and click the edit icon in the **Actions** pane.

Step 4 If you want to change the objects or network groups that are already added to the network group, perform the following steps:

a. Click the edit icon appearing beside the object name or network group to modify them.

b. Click the checkmark to save your changes.

Note
You can click the remove icon to delete the value from a network group.

Step 5 If you want to add new network objects or network groups to this network group, you have to perform the following steps:

a. In the **Values** field, enter a new value or the name of an existing network object. When you start typing, Security Cloud Control provides object names or values that match your entry. You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

b. If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object, or network group to the new network group.

c. If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 6 Click **Save**. Security Cloud Control displays the policies that will be affected by the change.

Step 7 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 8 Preview and deploy configuration changes for all devices, on page 597.

Add Additional Values to a Shared Network Group in Security Cloud Control

The values in a shared network group that are present on all devices associated with it are called "default values." Security Cloud Control allows you to add "additional values" to the shared network group and assign those values to some devices associated with that shared network group. When Security Cloud Control deploys the changes to the devices, it determines the contents and pushes the "default values" to all devices associated with the shared network group and the "additional values" only to the specified devices.

For example, consider a scenario where you have four AD main servers in your head office that should be accessible from all your sites. Therefore, you have created an object group named "Active-Directory" to use it in all your sites. Now you want to add two more AD servers to one of your branch offices. You can do this by adding their details as additional values specific to that branch office on the object group "Active-Directory." These two servers do not participate in determining whether the object "Active-Directory" is consistent or shared. Therefore, the four AD main servers are accessible from all your sites, but the branch office (with two additional servers) can access two AD servers and four AD main servers.

Note If there are inconsistent shared network groups, you can combine them into a single shared network group with additional values. See Resolve Inconsistent Object Issues for more information.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the shared network group that you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

- The **Devices** field shows the devices that the shared network group is present.

- The **Usage** field shows the rulesets associated with the shared network group.
- The **Default Values** field specifies the default network objects and their values associated with the shared network group that was provided during their creation. Next to this field, you can see the number of devices that contain this default value, and you can click to see their names and device types. You can also see the rulesets associated with this value.

Step 4 In the **Additional Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 5 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 6 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 7 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 8 In the **Devices** column, click the cell associated with the newly added object and click **Add Devices**.

Step 9 Select the devices that you want and click **OK**.

Step 10 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 11 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 12 Preview and deploy configuration changes for all devices, on page 597.

Edit Additional Values in a Shared Network Group in Security Cloud Control



Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object having the override you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click the cell in the **Devices** column to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Default Values** to push and make it an additional value of the shared network group. All devices associated with the shared network group are automatically assigned to it.
- Click arrow in **Override Values** to push and make it as default objects of the shared network group.
- Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and deploy configuration changes for all devices, on page 597.

Deleting Network Objects and Groups in Security Cloud Control

If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Deleting a network object or group from the **Objects** page deletes the replicated network object or group from the **Objects** page on the Cloud-Delivered Firewall Management Center and vice-versa.

Create or Edit a Firepower Network Object or Network Groups

A Firepower network object can contain a hostname, an IP address, or a subnet address expressed in CIDR notation. **Network groups** are conglomerates of network objects and network groups that are used in access rules, network policies, and NAT rules. You can create, read, update, and delete network objects and network groups using Security Cloud Control.

Firepower network objects and groups can be used by ASA, Firewall Threat Defense, FDM-managed, and Meraki devices. See Reuse network objects across products, on page 34.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Table 9: IP addresses that can be added to network objects

Device type	IPv4 / IPv6	Single Address	Range of addresses	Partially Qualified Domain Name (PQDN)	Subnet using CIDR Notation
Firepower	IPv4 / IPv6	Yes	Yes	Yes	Yes

Create a Firepower Network Object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button to create an object.

Step 3 Click **FTD** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network object**.

Step 6 In the **Value** section:

- Select **eq** and enter a single IP address, a subnet address expressed in CIDR notation, or a Partially Qualified Domain Name (PQDN).
- Select **range** and enter an IP address range.

Note
Do not set a host bit value. If you enter a host bit value other than 0, Security Cloud Control unsets it while creating the object, because the Cloud-Delivered Firewall Management Center only accepts IPv6 objects with host bits not set.

Step 7 Click **Add**.

Attention: The newly created network objects aren't associated with any FDM-managed device as they aren't part of any rule or policy. To see these objects, select the **Unassociated** objects category in object filters. For more information, see Object Filters. Once you use the unassociated objects in a device's rule or policy, such objects are associated with that device.

Create a Firepower Network Group

A **network group** can contain network objects and network groups. When you create a new network group, you can search for existing objects by their name, IP addresses, IP address range, or FQDN and add them to the network group. If the object isn't present, you can instantly create that object in the same interface and add it to the network group.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **FTD** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network group**.

Step 6 In the **Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 7 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 8 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 9 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Note: You can click the edit icon to modify the details. Clicking the delete button doesn't delete the object itself; instead, it removes it from the network group.

Step 10 After adding the required objects, click **Save** to create a new network group.

Step 11 Preview and Deploy Configuration Changes for All Devices.

Edit a Firepower Network Object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the network object and click the edit icon in the **Actions** pane.

Step 4 Edit the values in the dialog box in the same fashion that you created them in "Create a Firepower Network Group".

Note
Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Edit a Firepower Network Group



Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the network group you want to edit by using object filters and search field.

Step 3 Select the network group and click the edit icon in the **Actions** pane.

Step 4 Change the object name and description if needed.

Step 5 If you want to change the objects or network groups that are already added to the network group, perform the following steps:

a. Click the edit icon appearing beside the object name or network group to modify them.

b. Click the checkmark to save your changes. **Note**: You can click the remove icon to delete the value from a network group.

Step 6 If you want to add new network objects or network groups to this network group, you have to perform the following steps:

a. In the **Values** field, enter a new value or the name of an existing network object. When you start typing, Security Cloud Control provides object names or values that match your entry. You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

b. If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

c. If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It's is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 7 Click **Save**. Security Cloud Control displays the policies that will be affected by the change.

Step 8 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 9 Preview and Deploy Configuration Changes for All Devices.

Add an Object Override

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object to which you want to add an override, using object filters and search field.

Step 3 Select the network object and click the edit icon in the **Actions** pane.

Step 4 Enter the value in the **Override Values** dialog box and click **+ Add Value**.

Important
The override you are adding must have the same type of value that the object contains. For example, to a network object, you can configure an override only with a network value and not a host value.

Step 5 Once you see that the value is added, click the cell in the **Devices** column in **Override Values**.

Step 6 Click **Add Devices**, and choose the device to which you want the override to be added. The device you select must contain the object to which you are adding the override.

Step 7 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 8 Click **Confirm** to finalize the addition of the override to the object and any devices affected by it.

Note
You can add more than one override to an object. However, you must select a different device, which contains the object, each time you are adding an override.

Step 9 See Object Overrides, on page 27 to know more about object overrides and Edit Object Overrides , on page 48 to edit an existing override.

Edit Object Overrides

You can modify the value of an existing override as long as the object is present on the device.

Procedure

Step 1 Navigate to **Objects**.

Step 2 Locate the object having override you want to edit by using object filters and search field.

Step 3 Select the object having override and click the edit icon in the Actions pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click on the cell in the **Devices** column in **Override Values** to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Override Values** to push and make it as the default value of the shared object.
- Click the delete icon next to the override you want to remove.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and Deploy Configuration Changes for All Devices.

Add Additional Values to a Shared Network Group

The values in a shared network group that are present on all devices associated with it are called "default values." Security Cloud Control allows you to add "additional values" to the shared network group and assign those values to some devices associated with that shared network group. When Security Cloud Control deploys the changes to the devices, it determines the contents and pushes the "default values" to all devices associated with the shared network group and the "additional values" only to the specified devices.

For example, consider a scenario where you have four AD main servers in your head office that should be accessible from all your sites. Therefore, you have created an object group named "Active-Directory" to use in all your sites. Now you want to add two more AD servers to one of your branch offices. You can do this by adding their details as additional values specific to that branch office on the object group "Active-Directory." These two servers do not participate in determining whether the object "Active-Directory" is consistent or shared. Therefore, the four AD main servers are accessible from all your sites, but the branch office (with two additional servers) can access two AD servers and four AD main servers.

Note If there are inconsistent shared network groups, you can combine them into a single shared network group with additional values. See Resolve Inconsistent Object Issues, on page 102 for more information.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the shared network group you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

- The **Devices** field shows the devices the shared network group is present.
- The **Usage** field shows the rulesets associated with the shared network group.
- The **Default Values** field specifies the default network objects and their values associated with the shared network group that was provided during their creation. Next to this field, you can see the number of devices that contain this default value, and you can click to see their names and device types. You can also see the rulesets associated with this value.

Step 4 In the **Additional Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 5 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 6 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 7 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 8 In the **Devices** column, click the cell associated with the newly added object and click **Add Devices**.

Step 9 Select the devices that you want and click **OK**.

Step 10 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 11 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 12 Preview and Deploy Configuration Changes for All Devices.

Edit Additional Values in a Shared Network Group

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object having the override you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click the cell in the **Devices** column to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Default Values** to push and make it an additional value of the shared network group. All devices associated with the shared network group are automatically assigned to it.
- Click arrow in **Override Values** to push and make it as default objects of the shared network group.
- Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and Deploy Configuration Changes for All Devices.

Deleting Network Objects and Groups in Security Cloud Control

If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Deleting a network object or group from the **Objects** page deletes the replicated network object or group from the **Objects** page on the Cloud-Delivered Firewall Management Center and vice-versa.

Discover and manage On-Premises Firewall Management Center network objects

If you have an on-premises Firewall Management Center that you manage using Security Cloud Control and you want to share and manage its objects, perform this procedure:

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center** to view the **Services** page.

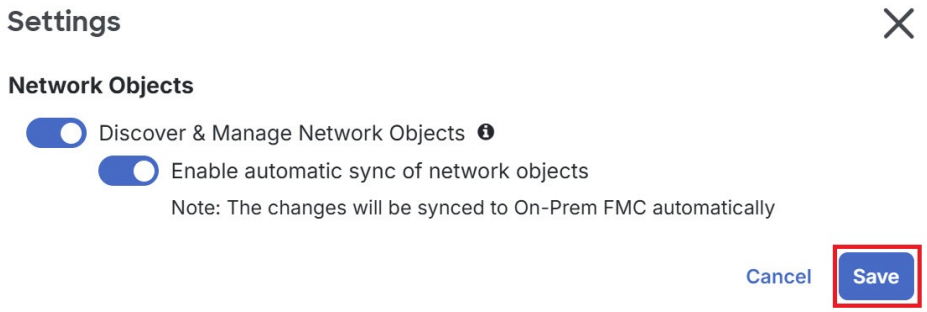
Step 2 If you have already onboarded an on-premises Firewall Management Center to Security Cloud Control, select it.

If you want to onboard a new on-premises Firewall Management Center, see Onboard an On-Prem Firewall Management Center.

Step 3 Choose **Settings** from the **Actions** pane. The **Actions** pane does not appear when you select more than one on-premises Firewall Management Center.

Note
You must be an admin or super admin to use **Settings**.

Step 4 Enable the **Discover & Manage Network Objects** toggle button. To automatically synchronize your changes with on-premises Firewall Management Center instead of staging them for review, turn on the **Enable automatic sync of network objects** toggle button. Then, click **Save**.



Note

- You cannot enable the **Discover & Manage Network Objects** toggle button if the selected on-premises Firewall Management Center has one or more child domains or if it has the Change Management workflow enabled.
- You cannot enable the **Enable automatic sync of network objects** toggle button if the **Discover & Manage Network Objects** toggle button is disabled.

For every new on-premises Firewall Management Center onboarded to Security Cloud Control, this toggle button needs to be enabled manually. After you enable this option, Security Cloud Control discovers objects from your on-premises Firewall Management Center. You can then share and manage these objects, and use them to set consistent object definitions across other platforms managed by Security Cloud Control.

In Security Cloud Control, when you add overrides to objects that are discovered from an on-premises Firewall Management Center and push the changes back, these objects can now be overridden, even if overrides were not allowed previously. The **Allow Overrides** check box in the **View Network Object** window is selected automatically when an override is added from Security Cloud Control.

Note
If you want to assign already-existing objects in Security Cloud Control to your on-premises Firewall Management Center, choose the on-premises Firewall Management Center and click **Assign Objects** from the **Actions** pane.

URL objects

URL objects and URL groups are used by Firepower devices. Use URL objects and groups (collectively referred to as URL objects) to define the URL or IP addresses of web requests. You can use these objects to implement manual URL filtering in access control policies or blocking in Security Intelligence policies. A URL object defines a single URL or IP address, whereas a URL group defines more than one URL or IP address.

When creating URL objects, keep the following points in mind:

- If you do not include a path, meaning the URL has no / character, Security Cloud Control matches by the server host name only. The host name matches if it appears after the :// separator or after any dot in the host name. For example, ign.com matches ign.com and www.ign.com, but not verisign.com.
- If you include one or more `/` characters, Security Cloud Control uses the entire URL string for substring matching, including the server name, path, and query parameters.
- Do not use manual URL filtering to block or allow individual web pages or parts of sites unless you accept the risk of unexpected matches. Server paths can change, and substring matching can match unintended servers, paths, or query parameter strings.
- Security Cloud Control disregards the encryption protocol. If you block a website, HTTP and HTTPS traffic to that website is blocked unless you use an application condition to target a specific protocol.
- Do not include the protocol when you create a URL object. For example, use example.com, not http://example.com.
- If you use a URL object to match HTTPS traffic in an access control rule, create the object with the subject common name in the public key certificate used to encrypt the traffic. Do not include subdomain information. For example, use example.com, not www.example.com.
- The subject common name in a certificate might not match the website domain name. For more consistent HTTPS URL filtering, use SSL Decryption policy so that URL filtering rules evaluate decrypted traffic.



Note URL objects do not match HTTPS traffic if the browser resumes a TLS session, because certificate information is no longer available. HTTPS connection matching can therefore be inconsistent.

Create or Edit an FDM-Managed URL Object

URL objects are reusable components that specify a URL or IP address.

To create a URL object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **URL**.

Step 3 Enter an object name and description.

Step 4 Select **Create a URL object.**

Step 5 Enter the specific URL or IP address for your object.

Step 6 Click **Add**.

Create a Firepower URL Group

A URL group can be made up of one or more URL objects representing one or more URLs or IP addresses. The Firepower Device Manager and Firepower Management Center also refer to these objects as "URL Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **URL**.

Step 3 Enter an object name and description.

Step 4 Select **Create a URL group.**

Step 5 Add an existing object by clicking **Add Object,** selecting an object, and clicking **Select**. Repeat this step to add more objects.

Step 6 Click **Add** when you are done adding URL objects to the URL group.

Edit a Firepower URL Object or URL Group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click  to edit.

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Geolocation objects

A geolocation object defines countries and continents that host the device that is the source or destination of traffic. You can use these objects in policies to control traffic instead of using IP addresses. For example, using geographical location, you could easily restrict access to a particular country without needing to know all of the potential IP addresses used there.

You can usually select geographical locations directly in a policy without using geolocation objects. Use an object when several policies need the same countries or continents.

Update the geolocation database

To use current geographical location data to filter traffic, Cisco recommends that you regularly update the geolocation database (GeoDB). You cannot update the GeoDB in Security Cloud Control. Refer to the following sections of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running to learn more about the GeoDB and how to update it.

- Updating System Databases and Feeds
- Updating System Databases

Create and Edit a Firepower Geolocation Filter Object

You can create a geolocation object by itself on the object page or when creating a security policy. This procedure creates a geolocation object from the object page.

To create a geolocation object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **Geolocation**.

Step 3 Enter an **object name** for the object and optionally, a **description**.

Step 4 In the filter bar, start typing the name of a country or a region and you are presented with a list of possible matches.

Step 5 Check the country, countries, or regions that you want to add to the object.

Step 6 Click **Add**.

Edit a Geolocation Object

Procedure

Step 1 In the left pane, choose **Objects**.

Step 2 Use the filter panes and search field to locate your object.

Step 3 In the **Actions** pane, click **Edit**.

Step 4 You can change the name of the object and add or remove countries and regions to your object.

Step 5 Click **Save**.

Step 6 You will be notified if any devices are impacted. Click **Confirm**.

Step 7 If a device or policy was impacted, open the **Security Devices** page and **Preview and Deploy** the changes to the device.

DNS group objects

A DNS group defines a list of DNS servers and associated attributes. DNS servers resolve FQDNs, such as www.example.com, to IP addresses. You can configure different DNS group objects for management and data interfaces.

Create a DNS Group Object

Use the following procedure to create a new DNS group object in Security Cloud Control:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **DNS Group**.

Step 3 Enter an **Object Name**.

Step 4 (Optional) Add a description.

Step 5 Enter the IP address of a **DNS server**. You can add up to six DNS servers; click the **Add DNS Server**. If you want to remove a server address, click the delete icon.

Note
The list is in priority order: the first server in the list is always used, and subsequent servers are used only if a response is not received from the servers above it. Although you can add up to six servers, only the first 3 servers listed will be used for the management interface.

Step 6 Enter the **Domain Search Name**. This domain is added to hostnames that are not fully qualified; for example, serverA instead of serverA.example.com.

Step 7 Enter the number of **Retries**. The number of times, from 0 to 10, to retry the list of DNS servers when the system does not receive a response. The default is 2. This setting applies to DNS groups used on the data interfaces only.

Step 8 Enter the **Timeout** value. The number of seconds, from 1 to 30, to wait before trying the next DNS server. The default is 2 seconds. Each time the system retries the list of servers, this timeout doubles. This setting applies to DNS groups used on the data interfaces only.

Step 9 Click **Add**.

Edit a DNS Group Object

You can edit a DNS group object that was created in Security Cloud Control or in Firewall Device Manager. Use the following procedure to edit an existing DNS group object:

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects**.

Step 2 Locate the **DNS Group Object** you want to edit by using object filters and search field.

Step 3 Select the object and click the edit icon in the **Actions** pane.

Step 4 Edit any of the following entries:

- Object Name.
- Description.
- DNS Server. You can edit, add, or remove DNS servers from this list.
- Domain Search Name.
- Retries.
- Timeout.

Step 5 Click **Save**.

Step 6 Preview and Deploy Configuration Changes for All Devices.

Delete a DNS Group Object

Use the following procedure to delete a DNS Group Object from Security Cloud Control:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the **DNS Group Object** you want to edit by using object filters and search field.

Step 3 Select the object and click the **Remove** icon.

Step 4 Confirm you want to delete the DNS group object and click **Ok**.

Step 5 Preview and Deploy Configuration Changes for All Devices.

Add a DNS Group Object as an FDM-Managed DNS Server

You can add a DNS group object as the preferred DNS Group for either the **Data Interface** or the **Management Interface**.

Certificate objects

Digital certificates provide digital identification for authentication. Certificates are used for SSL (Secure Socket Layer), TLS (Transport Layer Security), and DTLS (Datagram TLS) connections, such as HTTPS and LDAPS.

See the **About Certificates** and **Configuring Certificates** following sections of the Resuable Objects chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running.

About certificates

Digital certificates provide digital identification for authentication. Certificates include information that identifies a device or user, such as a name, serial number, company, department, or IP address. Certificates also include a copy of the public key for the user or device. Certificates are used for SSL (Secure Socket Layer), TLS (Transport Layer Security), and DTLS (Datagram TLS) connections, such as HTTPS and LDAPS.

You can create the following types of certificate:

- **Internal certificates**—Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a certificate authority (CA). You can also generate a self-signed certificate.

  The system comes with the following pre-defined internal certificates, which you can use as is or replace: **DefaultInternalCertificate** and **DefaultWebServerCertificate**

- **Internal Certificate Authority (CA)** certificates—Internal CA certificates are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a certificate authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

The system comes with the following pre-defined internal CA certificate, which you can use as is or replace: **NGFW-Default-InternalCA**

- **Trusted Certificate Authority (CA)** certificates—A trusted CA certificate is used to sign other certificates. It is self-signed and called a root certificate. A certificate that is issued by another CA certificate is called a subordinate certificate.

  Certificate Authorities (CAs) are trusted authorities that "sign" certificates to verify their authenticity, thereby guaranteeing the identity of the device or user. CAs issue digital certificates in the context of a PKI, which uses public-key or private-key encryption to ensure security. A CA can be a trusted third party, such as VeriSign, or a private (in-house) CA that you establish within your organization. CAs are responsible for managing certificate requests and issuing digital certificates.

  The system includes many trusted CA certificates from third-party certificate authorities. These are used by SSL decryption policies for Decrypt Re-Sign actions.

For more information, see the **Certificate Types Used by Feature** section of the Reusable Objects chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running.

Certificate Types Used by Feature

You need to create the right type of certificate for each feature. The following features require certificates.

Identity Policies (Captive Portal)—Internal Certificate

(Optional.) Captive portal is used in identity policies. Users must accept this certificate when authenticating to the device for purposes of identifying themselves and receiving the IP address associated with their usernames. If you do not supply a certificate, the device uses an automatically generated certificate.

SSL Decryption Policy—Internal, Internal CA, and Trusted CA Certificates.

(Required.) The SSL decryption policy uses certificates for the these purposes:

- Internal certificates are used for known key decryption rules.
- Internal CA certificates are used for decrypt re-sign rules when creating the session between the client and FDM-managed device.
- Trusted CA certificates
  - They are used indirectly for decrypt re-sign rules when creating the session between the FDM-managed device and server. Unlike the other certificates, you do not directly configure these certificates in the SSL decryption policy; they simply need to be uploaded to the system. The system includes a large number of trusted CA certificates, so you might not need to upload any additional certificates.
  - When creating an Active Directory Realm object and configuring the directory server to use encryption.

Configuring Certificates

Certificates used in identity policies or SSL decryption policies must be an X509 certificate in PEM or DER format. You can use OpenSSL to generate certificates if needed, obtain them from a trusted Certificate Authority, or create self-signed certificates.

Use these procedures to configure certificate objects:

- Uploading Internal and Internal CA Certificates
- Uploading Trusted CA Certificates
- To view or edit a certificate, click either the edit icon or the view icon for the certificate.
- To delete an unreferenced certificate, click the trash can icon (delete icon) for the certificate. See Deleting Objects.

Uploading Internal and Internal CA Certificates

Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed certificate.

Internal Certificate Authority (CA) certificates (Internal CA certificates) are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Procedure

This procedure creates an internal or internal CA certificate by uploading a certificate file or pasting existing certificate text into a text box. If you want to generate a self-signed certificate, see Generating Self-Signed Internal and Internal CA Certificates.

To create an internal or internal CA certificate object, or when adding a new certificate object to a policy, follow this procedure:

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  a. In the left pane, click **Objects**.
  b. Click the plus button  and select **FTD** > **Certificate**
- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 3 In step 1, select **Internal Certificate** or **Internal CA.**

Step 4 In step 2, select **Upload** to upload the certificate file.

Step 5 In step 3, in the **Server Certificate** area, paste the certificate contents in the text box or upload the certificate file as explained in the wizard. If you paste the certificate into the text box, the certificate must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
 MIICMTCCAZoCCQDdUV3NGK/cUjANBgkqhkiG9w0BAQsFADBdMQswCQYDVQQGEwJV
UzETMBEGA1UECAwKU29tZS1TdGF0ZTEhMB8GA1UECgwYSW50ZXJuZXQgV2lkZ2l0
(...5 lines removed...)
shGJDReRYJQqilhHZrYTWZAYTrD7NQPHutK+ZiJng67cPgnNDuXEn55UwMOQoHBp
HMUwmhiGZlzJM8BpX2Js2yQ3ms30pr8rO+gPCPMCAwEAATANBgkqhkiG9w0BAQsF
AAOBgQCB02CebA6YjJCGr2CJZrQSeUwSveRBpmOuoqm98o2Z+5gJM5CkqgfxwCUn
RV7LRfQGFYd76V/5uor4Wx2ZCjqy6+zuQEm4ZxWNSZpA9UBixFXJCs9MBO4qkG5D
vlk3WYJfcgyJ10h4E4b0W2xiixBU+xoOTLRATnbKY36EWAG5cw==
-----END CERTIFICATE-----
```

Step 6 In step 3, in the **Certificate Key** area, paste the key contents into the Certificate Key text box or upload the key file as explained in the wizard. If you paste the key into the text box, the key must include the BEGIN PRIVATE KEY or BEGIN RSA PRIVATE KEY and END PRIVATE KEY or END PRIVATE KEY lines.

Note
The key cannot be encrypted.

Step 7 Click **Add**.

Uploading Trusted CA Certificates

A trusted Certificate Authority (CA) certificate is used to sign other certificates. It is self-signed and called a root certificate. A certificate that is issued by another CA certificate is called a subordinate certificate.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Obtain a trusted CA certificate from an external certificate authority, or create one using your own internal CA, for example, with OpenSSL tools. Then, use the following procedure to upload the certificate.

Procedure

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  a. In the left pane, click **Objects**.
  b. Click  > **FTD** > **Certificate**.
- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 3 In step 1, select **External CA Certificate** and click **Continue**. The wizard advances to step 3.

Step 4 In step 3, in the **Certificate Contents** area, paste the certificate contents in the text box or upload the certificate file as explained in the wizard.

The certificate must adhere to these guidelines:

- The name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.
- The certificate must be an X509 certificate in PEM or DER format.
- The certificate you paste must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
MIIFgTCCA2mgAwIBAgIJANvdcLnabFGYMA0GCSqGSIb3DQEBCwUAMFcxCzAJBgNV
BAYTAlVTMQswCQYDVQQIDAJUWDEPMA0GA1UEBwwGYXVzdGluMRQwEgYDVQQKDAsx
OTIuMTY4LjEuMTEUMBIGA1UEAwwLMTkyLjE2OC4xLjEwHhcNMTYxMDI3MjIzNDE3
WhcNMTcxMDI3MjIzNDE3WjBXMQswCQYDVQQGEwJVUzELMAkGA1UECAwCVFgxDzAN
BgNVBAcMBmF1c3RpbjEUMBIGA1UECgwLMTkyLjE2OC4xLjExFDASBgNVBAMMCzE5
Mi4xNjguMS4xMIICIjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA5NceYwtP
ES6Ve+S9z7WLKGX5JlF58AvH82GPkOQdrixn3FZeWLQapTpJZt/vgtAI2FZIK31h
(...20 lines removed...)
hbr6HOgKlOwXbRvOdksTzTEzVUqbgxt5Lwupg3b2ebQhWJz4BZvMsZX9etveEXDh
PY184V3yeSeYjbSCF5rP71fObG9Iu6+u4EfHp/NQv9s9dN5PMffXKieqpuN20Ojv
2b1sfOydf4GMUKLBUMkhQnip6+3W
-----END CERTIFICATE-----
```

Step 5 Click **Add**.

Generating Self-Signed Internal and Internal CA Certificates

Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed certificate.

Internal Certificate Authority (CA) certificates (Internal CA certificates) are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

You can also create these certificates using OpenSSL, or obtain them from a trusted CA, and upload them. For more information, see Uploading Internal and Internal CA Certificates.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Note New self-signed certificates are generated with a 5-year validity term. Be sure to replace certificates before they expire.

Warning Upgrading devices that have self-signed certificates may experience issues; see New Certificate Detected for more information.

Procedure

This procedure generates a self-signed certificate by entering the appropriate certificate field values in a wizard. If you want to create an internal or internal CA certificate by uploading a certificate file, see Uploading Internal and Internal CA Certificates.

To generate a self-signed certificate, follow this procedure:

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  a. In the left pane, click **Objects**.
  b. Click > **FTD** > **Certificate**.
- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 3 In step 1, select **Internal Certificate** or **Internal CA.**

Step 4 In step 2, select **Self-Signed** to create the self-signed certificate in this step.

Step 5 Configure at least one of the following for the certificate subject and issuer information.

- Country (C)— Select the country code from the drop-down list.
- State or Province (ST)— The state or province to include in the certificate.
- Locality or City (L)— The locality to include in the certificate, such as the name of the city.
- Organization (O)— The organization or company name to include in the certificate.
- Organizational Unit (Department) (OU)— The name of the organization unit (for example, a department name) to include in the certificate.
- Common Name (CN)— The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.

Step 6 Click **Add**.

ASA trustpoint objects

A trustpoint object lets you add digital certificates and install them on one or more managed ASA devices. A trustpoint object can contain an identity pair, an identity certificate only, or a CA certificate only. An identity pair includes an identity certificate and the issuer CA certificate.

You can configure many trustpoints in an ASA device. Supported certificate formats are PKCS12, PEM, and DER.

Add an identity certificate object by using PKCS12

This procedure creates an internal certificate identity or internal identity certificate by uploading a certificate file or pasting existing certificate text into a text box. You can generate as many identity certificates as you want.

You can upload a file encoded in **PKCS12** format. A PKCS12 is a single file that holds the CA server certificate, any intermediate certificates, and the private key in one encrypted file. A PKCS#12, or PFX, file holds a server certificate, intermediate certificates, and a private key in one encrypted file. Enter the **Passphrase** value for decryption.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 4 In the **Certificate Type** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **Upload** to upload the certificate file.

The **Enrollment** step is set to Terminal.

Step 6 In the **Certificate Contents** step, enter the PKCS12 format details.

A PKCS#12, or PFX, file holds a server certificate, intermediate certificates, and a private key in one encrypted file. Enter the **Passphrase** value for decryption.

Step 7 Click **Continue**.

Step 8 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1-1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache

capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.
  - **SSL & IPSec** — Use for authenticating SSL & IPSec connections
  - **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension.
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 9 Click **Add**.

Create a self-signed ASA identity certificate object

This procedure describes steps for generating a self-signed certificate for your ASA by entering the appropriate certificate field values in a wizard. You can generate as many self-signed certificates as you want.

To create a Self-Signed identity certificate object, perform these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Identity Certificate** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **New** to upload the certificate file and click **Continue**.

Step 6 In the **Enrollment** step, select **Self-Signed** and click **Continue**.

The **Certificates Content** step appears. Read Self-Signed and CSR Certificate Generation Based on Certificate Contents to understand the CN and SANS content in the Self-Signed certificate that is being generated.

Step 7 In the **Certificate Contents** step, configure the following:

- **Country (C)**— Select the country code from the drop-down list.
- **State or Province (ST)**—The state or province to include in the certificate.
- **Locality or City (L)**—The locality to include in the certificate, such as the name of the city.
- **Organization (O)**—The organization or company name to include in the certificate.
- **Organizational Unit (Department) (OU)**—The name of the organization unit (for example, a department name) to include in the certificate.
- **Common Name (CN)**—The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.
- **Email Address (EA)**— The e-mail address associated with the identity certificate.
- **IP Address**— The ASA IP address on the network in four-part dotted-decimal notation.
- **Device's FQDN**— An unambiguous domain name, to indicate the position of the node in the DNS tree hierarchy.
- **Include Device's Serial Number**— Select the check box if you want to add the ASA serial number to the certificate parameters.

a) Click the **Key** tab.

- Choose the **RSA** or **ECDSA** key type.
- **Key Size**: If the key pair does not exist, defines the desired key size (modulus), in bits. The recommended key size for RSA is 1024 and for ECDSA is 348. The larger the modulus size, the more secure the key. However, keys with larger modulus sizes take longer to generate (a minute or more when larger than 512 bits) and longer to process when exchanged.
- Click **Continue**.

Step 8 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL — The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached** — Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.

- **SSL & IPSec** — Use for authenticating SSL & IPSec connections
- **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.

- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension. The presence of these items in a certificate i
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 9 Click **Add**.

Add an ASA identity certificate object for a Certificate Signing Request (CSR)

The Certification Authority (CA) server information and enrollment parameters are required to generate Certificate Signing Requests (CSRs) and obtain Identity Certificates from the specified CA. You need to select either Rivest-Shamir-Adleman (RSA) or Elliptic Curve Digital Signature Algorithm (ECDSA) key type to generate the request.

Create a trustpoint object by providing identification information and optionally uploading a CA certificate obtained from a CA.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Identity Certificate** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **New** to upload the certificate file and click **Continue**.

Step 6 In the **Enrollment** step, select **Manual**.

Step 7 (optional) You can paste or upload the CA certificate obtained from your CA. You can leave the field empty.

Step 8 Click **Continue**.

The Certificates Content step appears. Read Self-Signed and CSR Certificate Generation Based on Certificate Contents to understand the CN and SANS content in the Signed certificate that is being generated.

Step 9 In the **Certificate Contents** step, configure the following:

- **Country (C)**— Select the country code from the drop-down list.
- **State or Province (ST)**—The state or province to include in the certificate.
- **Locality or City (L)**—The locality to include in the certificate, such as the name of the city.
- **Organization (O)**—The organization or company name to include in the certificate.
- **Organizational Unit (Department) (OU)**—The name of the organization unit (for example, a department name) to include in the certificate.
- **Common Name (CN)**—The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.
- **Email Address (EA)**— The e-mail address associated with the identity certificate.
- **IP Address**— The ASA IP address on the network in four-part dotted-decimal notation.
- **Subject Alternative Name (SAN)**— This field will be part of Certificate Subject DN as 'unstructuredName' as well. We recommend you use this field if the certificate is used for multiple domains or IP addresses.
  - **Use Device Host Name:** Host name of the device is used.
  - **Custom: Device's FQDN**— An unambiguous domain name, to indicate the position of the node in the DNS tree hierarchy.

    Note
    We recommend the values specified in CN and **Custom FQDN** are the same.

- **Include Device's Serial Number**— Select the check box if you want to include the serial number of ASA in the certificate. The CA uses the serial number to either authenticate certificates or to later associate a certificate with a particular device. If you are in doubt, include the serial number, as it is useful for debugging purposes.

a) Click the **Key** tab.

- Choose the **RSA** or **ECDSA** key type.
- **Key Size**: If the key pair does not exist, defines the desired key size (modulus), in bits. The recommended key size for RSA is 1024 and for ECDSA is 348. The larger the modulus size, the more secure the key. However, keys with larger modulus sizes take longer to generate (a minute or more when larger than 512 bits) and longer to process when exchanged.
- Click **Continue**.

Step 10 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

By default, the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.
  - **SSL & IPSec** — Use for authenticating SSL & IPSec connections
  - **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension. The presence of these items in a certificate i
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.

- **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 11 Click **Add**.

This creates a trustpoint certificate object.

Add a trusted CA certificate object for ASA

Obtain a trusted CA certificate from an external certificate authority, or create one using your own internal CA, for example, with OpenSSL tools. You can upload a file encoded in one of the following supported formats:

- Distinguished Encoding Rules (DER)
- Privacy-enhanced Electronic Mail (PEM)

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Certificate Type** step, select **Trusted CA Certificate**.

Step 5 In the **Certificate Contents** step, paste the certificate contents in the text box or upload the CA certificate file as explained in the wizard.

Step 6 Click **Continue**. The wizard advances to step 4.

The certificate must follow these guidelines:

- The name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.
- The certificate must be an X509 certificate in PEM or DER format.
- The certificate you paste must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
MIIFgTCCA2mgAwIBAgIJANvdcLnabFGYMA0GCSqGSIb3DQEBCwUAMFcxCzAJBgNV
BAYTAlVTMQswCQYDVQQIDAJUWDEPMA0GA1UEBwwGYXVzdGluMRQwEgYDVQQKDAsx
OTIuMTY4LjEuMTEUMBIGA1UEAwwLMTkyLjE2OC4xLjEwHhcNMTYxMDI3MjIzNDE3
WhcNMTcxMDI3MjIzNDE3WjBXMQswCQYDVQQGEwJVUzELMAkGA1UECAwCVFgxDzAN
BgNVBAcMBmF1c3RpbjEUMBIGA1UECgwLMTkyLjE2OC4xLjExFDASBgNVBAMMCzE5
Mi4xNjguMS4xMIICIjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA5NceYwtP
ES6Ve+S9z7WLKGX5JlF58AvH82GPkOQdrixn3FZeWLQapTpJZt/vgtAI2FZIK31h
(...20 lines removed...)
```

```
hbr6HOgKlOwXbRvOdksTzTEzVUqbgxt5Lwupg3b2ebQhWJz4BZvMsZX9etveEXDh
PY184V3yeSeYjbSCF5rP71fObG9Iu6+u4EfHp/NQv9s9dN5PMffXKieqpuN20Ojv
2b1sfOydf4GMUKLBUMkhQnip6+3W
-----END CERTIFICATE-----
```

Step 7 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default, the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if you want to validate if the subject of the certificate is a CA using the basic constraints extension.
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.

- **Accept certificates issued by the subordinates CAs of this CA** — Select this option to indicate that the ASA should accept certificates from the subordinate CA.
- **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 8 Click **Add**.

This creates a trustpoint certificate object.

Self-Signed and CSR certificate generation based on certificate contents

You need to have an idea of the CN and SANS content in the Self-Signed and CSR certificates. The content is based on the parameters you specify during their creation. You need to configure the parameters precisely for the AnyConnect clients to connect to the intended VPN headends of your organization.

This section provides different use cases with examples to give you an idea of the content of Self-Signed and CSR certificates based on the parameters specified.

Usecase 1: Different CN and FQDN values

Example:

- Common Name (CN): mywebsite.com
- FQDN: mysan.com

Table 10: Example: Different CN and FQDN values

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	mysan.com	mysan.com
CSR	mywebsite.com	mysan.com	-

Usecase 2: FQDN field set to None

Example:

- Common Name (CN): mywebsite.com
- FQDN: None

Table 11: Example: FQDN field set to None

	Common Name	SANS
Self-Signed	Host Name	-
CSR	mywebsite.com	-

Usecase 3: No FQDN (Default FQDN)

Example:

- Common Name (CN): mywebsite.com

Table 12: Example: No FQDN (Default FQDN)

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	Host Name	-
CSR	mywebsite.com	Host Name	Host Name

Usecase 4: IP Address is specified in FQDN

Example:

- Common Name (CN): mywebsite.com
- FQDN: 4.5.6.7

Table 13: Example: IP Address is specified in FQDN

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	4.5.6.7	-
CSR	mywebsite.com	4.5.6.7	4.5.6.7

Usecase 5: IP Address is Specified

Example:

- IP Address: 4.5.6.7
- Common Name (CN): mywebsite.com
- FQDN: fqdn.com

Table 14: Example: IP Address is specified

	Common Name	unstructuredAddress	unstructuredName	SANS
Self-Signed	mywebsite.com	4.5.6.7	fqdn.com	-
CSR	mywebsite.com	4.5.6.7	fqdn.com	fqdn.com

Usecase 6: Serial Number Check box is Selected

Example:

- Serial Number: 9AQXMWOKDT9

Table 15: Example: IP Serial Number Check box is Selected

	serialNumber	SANS
Self-Signed	9AQXMWOKDT9	-
CSR	9AQXMWOKDT9	fqdn.com

Usecase 7: Email Address is Specified

Example:

- EA: abc@xyz.com

Table 16: Example: Email Address is Specified

	unstructredName	emailAddress	SANS
Self-Signed	Host Name	abc@xyz.com	Host Name
CSR	Host Name	abc@xyz.com	-

IPsec proposal and IKE policy objects

IPsec is one of the most secure methods for setting up a VPN. IPsec provides data encryption at the IP packet level, offering a robust security solution that is standards-based. With IPsec, data is transmitted over a public network through tunnels. A tunnel is a secure, logical communication path between two peers. Traffic that enters an IPsec tunnel is secured by a combination of security protocols and algorithms called a transform set. During the IPsec security association (SA) negotiation, peers search for a transform set that is the same at both peers.

There are separate IPsec proposal objects based on the IKE version, IKEv1, or IKEv2:

- When you create an IKEv1 IPsec proposal, you select the mode in which IPsec operates, and define the required encryption and authentication types. You can select single options for the algorithms. If you want to support multiple combinations in a VPN, create and select multiple IKEv1 IPsec Proposal objects.
- When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and antireplay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

Create or edit an IKEv1 IPsec proposal object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel. There are separate objects for IKEv1 and IKEv2. Currently, Security Cloud Control supports IKEv1 IPsec proposal objects.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and anti-replay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

There are several pre-defined IKEv1 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

This procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv1 IPsec Proposals objects while editing the IKEv1 IPsec settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Proposal** link shown in the object list.

Procedure

Step 1 From the left pane, click **Objects**.

Step 2 Do one of these things:

- Click +, and select **FTD > IKEv1 IPsec Proposal** to create the new object.
- On the object page, select the IPsec proposal you want to edit and click **Edit** in the **Actions** pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Select the Mode in which the IKEv1 IPsec Proposal object operates.

- **Tunnel mode** encapsulates the entire IP packet. The IPSec header is added between the original IP header and a new IP header. This is the default. Use tunnel mode when the firewall is protecting traffic to and from hosts positioned behind the firewall. Tunnel mode is the normal way regular IPSec is implemented between two firewalls (or other security gateways) that are connected over an untrusted network, such as the Internet.
- **Transport mode** encapsulates only the upper-layer protocols of an IP packet. The IPSec header is inserted between the IP header and the upper-layer protocol header (such as TCP). Transport mode requires that both the source and destination hosts support IPSec, and can only be used when the destination peer of the tunnel is the final destination of the IP packet. Transport mode is generally used only when protecting a Layer 2 or Layer 3 tunneling protocol such as GRE, L2TP, and DLSW.

Step 5 Select the **ESP Encryption** (Encapsulating Security Protocol encryption) algorithm for this proposal. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.

Step 6 Select the **ESP Hash** or integrity algorithm to use for authentication. For an explanation of the options, see Deciding Which Hash Algorithms to Use, on page 483.

Step 7 Click **Add**.

Create or edit an IKEv2 IPsec proposal object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.

When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

There are several pre-defined IKEv2 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv2 IPsec Proposals objects while editing the IKEv2 IPsec settings in a VPN connection by clicking the Create New IPsec Proposal link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click  and select **FTD > IKEv2 IPsec Proposal** to create the new object.
- In the object page, select the IPsec proposal you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Configure the IKE2 IPsec proposal objects:

- **Encryption**—The Encapsulating Security Protocol (ESP) encryption algorithm for this proposal. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.
- **Integrity Hash**—The hash or integrity algorithm to use for authentication. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Hash Algorithms to Use, on page 483.

Step 5 Click **Add**.

Global IKE policies

Internet Key Exchange (IKE) is a key management protocol that is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

The IKE negotiation comprises two phases. Phase 1 negotiates a security association between two IKE peers, which enables the peers to communicate securely in Phase 2. During Phase 2 negotiation, IKE establishes SAs for other applications, such as IPsec. Both phases use proposals when they negotiate a connection. An IKE proposal is a set of algorithms that two peers use to secure the negotiation between them. IKE negotiation begins by each peer agreeing on a common (shared) IKE policy. This policy states which security parameters are used to protect subsequent IKE negotiations.

IKE policy objects define the IKE proposals for these negotiations. The objects that you enable are the ones used when the peers negotiate a VPN connection: you cannot specify different IKE policies per connection. The relative priority of each object determines which of these policies are tried first, with the lower number being a higher priority. The connection is not established if the negotiation fails to find a policy that both peers can support.

To define the global IKE policy, you select which objects to enable for each IKE version. If the pre-defined objects do not satisfy your requirements, create new policies to enforce your security policy.

Create or edit an IKEv1 policy

Internet Key Exchange (IKE) version 1 policy objects contain the parameters required for IKEv1 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv1 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv1 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Policy** link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click  and select **FTD > IKEv1 Policy** to create a new IKEv1 policy.
- In the object page, select the IKEv1 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name**, up to 128 characters.

Step 4 Configure the IKEv1 properties.

- **Priority**: The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **Encryption**: The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. For an explanation of the options, see Deciding Which Encryption Algorithm to Use.
- **Diffie-Hellman Group**: The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use.
- **Lifetime**: The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).
- **Authentication**: The method of authentication to use between the two peers. For more information, see Deciding Which Authentication Method to Use, on page 484.
  - **Preshared Key**: Use the preshared key that is defined on each device. These keys allow for a secret key to be shared between two peers and to be used by IKE during the authentication phase. If the peer is not configured with the same preshared key, the IKE SA cannot be established.
  - **Certificate**: Use the device identity certificates for the peers to identify each other. You must obtain these certificates by enrolling each peer in a Certificate Authority. You must also upload the trusted CA root and intermediate CA certificates used to sign the identity certificates in each peer. The peers can be enrolled in the same or a different CA. You cannot use self-signed certificates for either peer.
- **Hash**: The hash algorithm for creating a message digest, which is used to ensure message integrity. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.

Step 5 Click **Add**.

Create or edit an IKEv2 policy

Internet Key Exchange (IKE) version 2 policy objects contain the parameters required for IKEv2 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv2 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv2 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv2 Policy** link shown in the object list.

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects**.

Step 2 Do one of these things:

- Click + and select **FTD > IKEv2 Policy** to create a new IKEv2 policy.
- In the object page, select the IKEv2 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name**, up to 128 characters.

Step 4 Configure the IKEv2 properties.

- **Priority**: The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **State**: Whether the IKE policy is enabled or disabled. Click the toggle to change the state. Only enabled policies are used during IKE negotiations.
- **Encryption**: The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. Select all algorithms that you want to allow, although you cannot include both mixed-mode (AES-GCM) and normal mode options in the same policy. (Normal mode requires that you select an integrity hash, whereas mixed-mode prohibits a separate integrity hash selection.) The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.
- **Diffie-Hellman Group**: The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest group until a match is agreed upon. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use, on page 483.
- **Integrity Hash**: The integrity portion of the hash algorithm for creating a message digest, which is used to ensure message integrity. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. The integrity hash is not used with the AES-GCM encryption options. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.
- **Pseudo-Random Function (PRF) Hash**: The pseudo-random function (PRF) portion of the hash algorithm, which is used as the algorithm to derive keying material and hashing operations required for the IKEv2 tunnel encryption. In IKEv1, the Integrity and PRF algorithms are not separated, but in IKEv2, you can specify different algorithms for these elements. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match

is agreed upon. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.

- **Lifetime**: The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).

Step 5 Click **Add**.

Remote access VPN objects

Remote access VPN (RA VPN) objects include identity sources, RADIUS servers and groups, and group policy objects for ASA and FDM-managed devices.

Identity sources for FDM-Managed devices

Identity sources for FDM-managed devices include Microsoft AD realms and RADIUS servers. You can use identity source information to associate user identity with an IP address, authenticate RA VPN connections, or authenticate access to Security Cloud Control Firewall Management.

Click **Objects**, then click  and choose **> RA VPN Objects (ASA & FTD)** > **Identity Source** to create your sources. You would then use these objects when you configure the services that require an identity source. You can apply appropriate filters to search existing sources and manage them.

Active Directory realms for FDM-Managed devices

Active Directory provides user account and authentication information. When you deploy a configuration that includes an AD realm to an FDM-managed device, Security Cloud Control Firewall Management fetches users and groups from the AD server.

You can use AD realms for these purposes:

- Remote Access VPN, as a primary identity source. You can use AD in conjunction with a RADIUS server.
- Identity policy active authentication and passive authentication user identity source.
- Identity rule active authentication for a user.

Security Cloud Control Firewall Management requests an updated list of user groups once every 24 hours. Because you can add a maximum of 50 users or groups to a rule, selecting groups usually makes more sense than selecting individual users.

If you create an AD realm in Security Cloud Control Firewall Management, Security Cloud Control Firewall Management remembers the AD password when you create related identity source objects and add those objects to an identity rule.

If you use an AD realm object that was created in Firewall Device Manager, Security Cloud Control Firewall Management does not read the AD password. You must manually enter the correct AD password in Security Cloud Control Firewall Management.

You can use AD on Windows Server 2008 and 2012.

Metadata	Active Directory field
LDAP user name	samaccountname
First name	givename
Last Name	sn
email address	mail userprincipalname (if mail has no value)
Department	department distinguishedname (if department has no value)
Telephone number	telephonenumber

Determining the Directory Base DN

When you configure directory properties, you need to specify the common base Distinguished Name (DN) for users and groups. The base is defined in your directory server and differs from network to network. You must enter the correct bases for identity policies to work. If the base is wrong, the system cannot determine user or group names, and thus identity-based policies will be inoperable.



Note To get the correct bases, consult the administrator who is responsible for the directory servers.

For an active directory, you can determine the correct bases by logging into the AD server as a domain administrator, and using the **dsquery** command at a command prompt as follows to determine the bases:

User search base

Enter the **dsquery user** command with known username (partial or complete) to determine the base distinguished name. For example, the following command uses the partial name "John*" to return information for all users that start with "John."

C:\Users\Administrator>dsquery user -name "John*"

"CN=John Doe,CN=Users,DC=csc-lab,DC=example,DC=com"

The base DN would be "DC=csc-lab,DC=example,DC=com."

Group search base

Enter the **dsquery group** command with a known group name to determine the base DN. For example, the following command uses the group name Employees to return the distinguished name:

C:\>dsquery group -name "Employees"

"CN=Employees,CN=Users,DC=csc-lab,DC=example,DC=com"

The group base DN would be "DC=csc-lab,DC=example,DC=com."

You can also use the ADSI Edit program to browse the AD structure (**Start** > **Run** > **adsiedit.msc**). In ADSI Edit, right click any object, such as an organizational unit (OU), group, or user, and choose **Properties** to view the distinguished name. You can then copy the string of DC values as the base.

To verify that you have the correct base:

Procedure

Step 1 Click the **Test Connection** button in the directory properties to verify connectivity. Resolve any problems, and save the directory properties.

Step 2 Commit changes to the device.

Step 3 Create an access rule, select the **Users** tab, and try to add known user and group names from the directory. You should see auto-complete suggestions as you type for matching users and groups in the realm that contains the directory. If these suggestions appear in a drop-down list, then the system was able to query the directory successfully. If you see no suggestions, and you are certain the string you typed should appear in a user or group name, you need to correct the corresponding search base.

Refer to Create and Edit a Firepower Threat Defense Active Directory Realm Object for more information.

RADIUS servers and groups

You can use RADIUS servers to authenticate and authorize administration users.

When you configure a feature to use RADIUS servers, you select a RADIUS group instead of individual servers. A RADIUS group is a collection of RADIUS servers that are copies of each other. If a group has more than one server, they form a chain of backup servers to provide redundancy in case one server becomes unavailable. But even if you have only one server, you must create a one-member group to configure RADIUS support for a feature.

You can use this source for the following purposes:

- Remote Access VPN, as an identity source for authentication, and for authorization and accounting. You can use AD in conjunction with a RADIUS server.
- Identity policy, as a passive identity source to collect user identity from remote access VPN logins.

See Create and Edit a Firepower Threat Defense RADIUS Server Object or Group for more information.

Create or edit an Active Directory realm object

When you create or edit an identity source object such as an AD realm object, Security Cloud Control sends the configuration request to the FDM-managed devices through the SDC. The FDM-managed device then communicates with the configured AD realm.

Note that Security Cloud Control does not read the Directory Password for AD realms that are configured through the Firewall Device Manager console. If you use an AD realm object that was originally created in Firewall Device Manager, you must manually enter the Directory Password.

Create an FTD Active Directory realm object

Use the following procedure to create an object:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **RA VPN Objects (ASA & FTD)** > **Identity Source**.

Step 3 Enter an **Object Name** for the object.

Step 4 Select the **Device Type** is as **FTD**.

Step 5 In the first part of the wizard, select **Active Directory Realm** as the **Identity Source Type**. Click **Continue**.

Step 6 Configure the basic realm properties.

- **Directory Username, Directory Password** - The distinguished username and password for a user with appropriate rights to the user information you want to retrieve. For AD, the user does not need elevated privileges. You can specify any user in the domain. The username must be fully qualified; for example, Administrator@example.com (not simply Administrator).

  Note
  The system generates ldap-login-dn and ldap-login-password from this information. For example, Administrator@example.com is translated as cn=administrator,cn=users,dc=example,dc=com. Note that cn=users is always part of this translation, so you must configure the user you specify here under the common name "users" folder.

- **Base Distinguished Name** - The directory tree for searching or querying user and group information, that is, the common parent for users and groups. For example, cn=users,dc=example,dc=com.
- **AD Primary Domain** - The fully qualified AD domain name that the device should join. For example, example.com.

Step 7 Configure the directory server properties.

- **Hostname/IP Address** - The hostname or IP address of the directory server. If you use an encrypted connection to the server, you must enter the fully-qualified domain name, not the IP address.
- **Port** - The port number used for communications with the server. The default is 389. Use port 636 if you select LDAPS as the encryption method.
- **Encryption** - To use an encrypted connection for downloading user and group information, select the desired method,**STARTTLS** or **LDAPS**. The default is **None**, which means that user and group information is downloaded in clear text.
  - **STARTTLS** negotiates the encryption method and uses the strongest method supported by the directory server. Use port 389. This option is not supported if you use the realm for remote access VPN.
  - **LDAPS** requires LDAP over SSL. Use port 636.
- **Trusted CA Certificate** - If you select an encryption method, upload a Certificate Authority (CA) certificate to enable a trusted connection between the system and the directory server. If you are using a certificate to authenticate, the name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.

Step 8 (Optional) Use the **Test** button to validate the configuration.

Step 9 (Optional) Click **Add another configuration** to add multiple AD servers to the AD realm. The AD servers need to be duplicates of each other and support the same AD domain. Therefore, the basic realm properties such as **Directory name**, **Directory Password**, and **Base Distinguished Name** must be the same across all AD servers associated with that AD realm.

Step 10 Click **Add**.

Step 11 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit an FTD Active Directory realm object

Note that you cannot change the Identity Source Type when editing an Identity source object. You must create a new object with the correct type.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon  in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created in the procedures above. Expand the configuration bar listed below to edit or test the hostname/IP address or encryption information.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create or edit a RADIUS server object or group

When you create or edit an identity source object such as a RADIUS server object or a group of RADIUS server objects, Security Cloud Control sends the configuration request to the FDM-managed devices through the SDC. The FDM-managed device then communicates with the configured AD realm.

Create a RADIUS server object

RADIUS servers provide AAA (authentication, authorization, and accounting) services.

Use the following procedure to create an object:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **RA VPN Objects (ASA & FTD)** > **Identity Source**.

Step 3 Enter an **Object name** for the object.

Step 4 For the **Device Type**, select **FTD**.

Step 5 For the **Identity Source** type, select **RADIUS Server**. Click **Continue**.

Step 6 Edit the Identity Source configuration with the following properties:

- **Server Name or IP Address** - The fully-qualified host name (FQDN) or IP address of the server.
- **Authentication Port** (Optional) - The port on which RADIUS authentication and authorization are performed. The default is 1812.
- **Timeout** - The length of time, 1-300 seconds, that the system waits for a response from the server before sending the request to the next server. The default is 10 seconds.
- Enter the **Server Secret Key**(Optional) - The shared secret that is used to encrypt data between the Firepower Threat Defense device and the RADIUS server. The key is a case-sensitive, alphanumeric string of up to 64 characters, with no spaces. The key must start with an alphanumeric character or an underscore, and it can contain the special characters: $ & - _ . + @. The string must match the one configured on the RADIUS server. If you do not configure a secret key, the connection is not encrypted.

Step 7 If you have Cisco Identity Services Engine (ISE) already configured for your network and are using the server for remote access VPN Change of Authorization configuration, click the **RA VPN Only** link and configure the following:

- **Redirect ACL** - Select the extended Access Control List (ACL) to use for the RA VPN redirect ACL. If you do not have an extended ACL you must create the required extended ACL object from a Smart CLI template in the FDM-managed device console. See the **Configuring Smart CLI Objects** section of the Advanced Configuration chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running. The purpose of the redirect ACL is to send initial traffic to ISE to assess the client posture. The ACL should send HTTPS traffic to ISE, but not traffic that is already destined for ISE, or traffic that is directed to a DNS server for name resolution. See the **Configure Change of Authorization** section of the Virtual Private Networks (VPN) chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Managerfor the version your device is running.
- **Diagnostic Interface** -Enabling this option allows the system to always use the "Diagnostic" interface to communicate with the server. If you leave this disabled, Security Cloud Control will default to using the routing table to determine the which interface to use.

Step 8 Click **Add**.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create a RADIUS server group

A RADIUS server group contains one or more RADIUS server objects. The servers within a group must be copies of each other. These servers form a chain of backup servers, so that if the first server is unavailable, the system can try the next server in the list.

Use the following procedure to create an object group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **FTD** > **Identity Source**.

Step 3 Enter an **Object name** for the object.

Step 4 Select the **Device Type** as **FTD**.

Step 5 Select **RADIUS Server Group** as the Identity Source Type. Click **Continue**.

Step 6 Edit the Identity Source configuration with the following properties:

- **Dead Time** - Failed servers are reactivated only after all servers have failed. The dead time is how long to wait after the last server fails before reactivating all servers.
- **Maximum Failed Attempts** - The number of failed requests (that is, requests that do not get a response) sent to a RADIUS server in the group before trying the next server. When the maximum number of failed attempts is exceeded, the system marks the server as Failed. For a given feature, if you configured a fallback method using the local database, and all the servers in the group fail to respond, then the group is considered to be unresponsive, and the fallback method is tried. The server group remains marked as unresponsive for the duration of the dead time, so that additional AAA requests within that period do not attempt to contact the server group, and the fallback method is used immediately.
- **Dynamic Authorization/Port** (Optional) - If you enable RADIUS dynamic authorization or change of authorization (CoA) services for this RADIUS server group, the group will be registered for CoA notification and listen on the specified port for CoA policy updates from Cisco Identity Services Engine (ISE). Enable dynamic authorization only if you are using this server group in a remote access VPN in conjunction with ISE.

Step 7 Select an AD realm that supported the RADIUS server from the drop-down menu. If you have not already created an AD realm, click **Create** from inside the drop-down menu.

Step 8 Click the **Add** button  to add existing RADIUS server objects. Optionally, you can create a new RADIUS server object from this window is necessary.

Note
Add these objects in priority, as the first server in the list is used until it is unresponsive. FDM-managed device then defaults to the next server in the list.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit a Radius server object or group

Use the following procedure to edit a Radius server object or Radius server group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created them in the procedures above. To edit or test the hostname/IP address or encryption information, expand the configuration bar.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and Deploy now the changes you made, or wait and deploy multiple changes at once.

Security zone object

A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. You can define multiple zones, but a given interface can be in one zone only.

The Firepower system creates the following zones during initial configuration and they are displayed in Security Cloud Control's object page. You can edit zones to add or remove interfaces, or you can delete the zones if you no longer use them.

- **inside_zone**: Includes the inside interface. This zone is intended to represent internal networks.
- **outside_zone**: Includes the outside interface. This zone is intended to represent networks external to your control, such as the internet.

Typically, you would group interfaces by the role they play in your network. For example, you would place the interface that connects to the internet in the **outside_zone** security zone, and all of the interfaces for your internal networks in the **inside_zone** security zone. Then, you could apply access control rules to traffic coming from the outside zone and going to the inside zone.

Before creating zones, consider the access rules and other policies you want to apply to your networks. For example, you do not need to put all internal interfaces into the same zone. If you have 4 internal networks, and you want to treat one differently than the other three, you can create two zones rather than one. If you have an interface that should allow outside access to a public web server, you might want to use a separate zone for the interface.

Create a security zone object

To create a security zone object, follow these instructions:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click > **FTD** > **Security Zone** to create the object.

Step 3 Enter an object name and, optionally, a description.

Step 4 Select a mode:

- **Routed** : Routed interfaces are the normal interfaces used for through traffic that can apply security policies.
- **Passive**: Passive interfaces operate as packet sniffers and do not affect the traffic flow through the device.

Step 5 Select the interfaces to put in the security zone.

Step 6 Click **Add.**

Edit a security zone object

After onboarding an FDM-managed device, you will find there are already at least two security zones, one is the inside_zone and the other is the outside_zone. These zones can be edited or deleted. To edit any security zone object, follow these instructions:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Find the object you want to edit:

- If you know the name of the object, you can search for it in the Objects page:
  - Filter the list by security zone.
  - Enter the name of the object in the search field.
  - Select the object.
- If you know the object is associated with a device, you can search for it starting on the **Security Devices** page.
  - In the left pane, click **Security Devices**.
  - Click the **Devices** tab.
  - Click the apporpriate tab.
  - Use the device filter and search bar to locate your device.
  - Select the device.
  - In the Management pane at the right, click  **Objects.**
  - Use the object filter  and search bar to locate the object you are looking for.

Note
If the security zone object you created is not associated with a rule in a policy for your device, it is considered "unassociated" and you will not see it among the search results for a device.

Step 3 Select the object.

Step 4 Click the **Edit** icon in the Actions pane at the right.

Step 5 After editing any of the attributes of the object. Click **Save**.

Step 6 After clicking Save you receive a message explaining how these changes will affect other devices. Click **Confirm** to save the changes or **Cancel**.

Create or edit a Firepower security zone object

A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. You can define multiple zones, but a given interface can be in one zone only.

A security zone object is not associated with a device unless it is used in a rule for that device.

Service objects

ASA service objects

ASA service objects, service groups, and port groups are reusable components that contain protocols or ports considered part of the IP protocol suite. In a service object you can specify a single protocol and assign it to a source port, destination port, or both source and destination ports. A service group contains many service objects and can include a mix of protocols.

A port group is a kind of ASA service object. Port groups contain port objects that pair a service type, such as TCP or UDP, and a port number or a range of port numbers. You can then use the objects in security policies for the purposes of defining traffic matching criteria. For example, you can use them in access control rules to allow traffic to a specific range of TCP ports.

See Create and Edit ASA Service Objects for more information.

Firepower service objects

FTD service objects, service groups, and port groups are reusable components that contain protocols or ports considered part of the IP protocol suite.

FTD service groups are collections of service objects. A service group may contain objects for one or more protocols. You can use the objects and groups in security policies for purposes of defining network traffic matching criteria, for example, to use access rules to allow traffic to specific TCP ports. The system includes several pre-defined objects for common services. You can use these objects in your policies; however, you cannot edit or delete system-defined objects.

Firepower Device Manager and Firepower Management Center refer to service objects as port objects and service groups and port groups.

See Create and Edit Firepower Threat Defense Service Objects for more information.

Protocol objects

Protocol objects are a type of service object that contain less-commonly used or legacy protocols. Protocol objects are identified by a name and protocol number. Security Cloud Control recognizes these objects in

ASA and Firepower (FDM-managed device) configurations and gives them their own filter of "Protocols" so you can find them easily.

See Create and Edit Firepower Threat Defense Service Objects for more information.

ICMP objects

An Internet Control Message Protocol (ICMP) object is a service object specifically for ICMP and IPv6-ICMP messages. Security Cloud Control recognizes these objects in ASA and Firepower configurations when those devices are onboarded and Security Cloud Control gives them their own filter of "ICMP" so you can find the objects easily.

Using Security Cloud Control, you can rename or remove ICMP objects from an ASA configuration. You can use Security Cloud Control to create, update, and delete ICMP and ICMPv6 objects in a Firepower configuration.

Note For the ICMPv6 protocol, AWS does not support choosing specific arguments. Only rules that allow all ICMPv6 messages are supported.

See Create and Edit Firepower Threat Defense Service Objects for more information.

Create and Edit ASA Service Objects

In a service object, you can specify a single protocol and assign it to a source port, destination port, or both source and destination ports.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click **Create Object** > **ASA** > **Service**.

Step 3 Enter an object name.

Step 4 Select **Create a service object**

Step 5 Click the **Service Type** button and select the protocol for which you want to make an object.

- **For TCP, UDP, and TCP-UDP service types,** enter a source port, destination port, or both:
  - The source port identifier allows you to match traffic originating from a particular numbered port. In the source port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
  - The destination port identifier allows you to match traffic arriving at a particular numbered port. In the destination port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
- **For Protocol service types**, enter a protocol number between 0-255, or a well-known name, such as ip, tcp, udp, gre, and so forth.

Step 6 Click **Add**.

Examples

- A service object that identifies incoming FTP traffic would be one with a TCP Service type and a destination port range of 21.
- A service object that identifies outgoing DNS and DNS over TCP traffic would be one with a tcp-udb service type and a source port equal to 53.

Create an ASA Service Group

A service group can be made up of one or more service objects representing one or more protocols.

Procedure

Step 1 Choose **Objects**.

Step 2 Choose **Create Object** > **ASA** > **Service**.

Step 3 Enter an object name.

Step 4 Select **Create a service group.**

Step 5 Add an existing object by clicking **Add Object,** selecting an object, and clicking **Select**. Repeat this step to add more objects.

Step 6 If needed, add an extra individual service type value to the service group

- **For TCP, UDP, and TCP-UDP service types,** enter a source port, destination port, or both:
  - The source port identifier allows you to match traffic originating from a particular numbered port. In the source port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
  - The destination port identifier allows you to match traffic arriving at a particular numbered port. In the destination port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
- **For Protocol service types**, enter a protocol number between 0-255, or a well-known name, such as ip, tcp, udp, gre, and so forth.

Step 7 To add more individual port values, click **Add Another Value** and repeat step 6.

Step 8 Click **Add** when you are done adding service objects and service values to the service group.

Edit an ASA Service Object or Service Group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click edit .

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Create and edit Firepower service objects

To create a firepower service object, follow these steps:

Firewall Device Manager (FDM-managed) service objects are reusable components that specify a TCP/IP protocol and a port. The Firewall Device Manager, On-Premises Firewall Management Center and Cloud-Delivered Firewall Management Center refer to these objects as "Port Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click > **FTD** > **Service**.

Step 3 Enter an object name and description.

Step 4 Select **Create a service object.**

Step 5 Click the **Service Type** button and select the protocol for which you want to create an object.

Step 6 Configure the protocol as follows:

- **TCP**, **UDP**
  - Select **eq** and then enter either a port number or a protocol name. For example, you could enter 80 as a port number or HTTP as the protocol name.
  - You can also select **range** and then enter a range of port numbers, for example, **1 65535** (to cover all ports).
- **ICMP**, **IPv6-ICMP**-Select the ICMP **Type.** Select **Any** for the type to apply to all ICMP messages. For information on the types and codes, see the following pages:
  - ICMP-http://www.iana.org/assignments/icmp-parameters/icmp-parameters.xml
  - ICMPv6-http://www.iana.org/assignments/icmpv6-parameters/icmpv6-parameters.xml
- **Other**-Select the desired protocol.

Step 7 Click **Add**.

Step 8 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Create a Firepower Service Group

A service group can be made up of one or more service objects representing one or more protocols. The service objects need to be created before they can be added to the group. The Firepower Device Manager and Firepower Management Center refer to these objects as "Port Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **Service**.

Step 3 Enter an object name and description.

Step 4 Select **Create a service group.**

Step 5 Add an object to the group by clicking **Add Object.**

- Click **Create** to create a new object as you did above in Create a Firepower Service Object above.
- Click **Choose** to add an existing service object to the group. Repeat this step to add more objects.

Step 6 Click **Add** when you are done adding service objects to the service group.

Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Edit a Firepower service object or service group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the Actions pane, click **Edit** .

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Security group tag group

Security Group Tags

About Security Group Tags

If you use Cisco Identity Services Engine (ISE) to define and use **security group tag** (SGT) for classifying traffic in a Cisco TrustSec network, you can write access control rules that use SGT as matching criteria. Thus, you can block or allow access based on security group membership rather than IP addresses.

In ISE, you can create a SGT and assign host or network IP addresses to each tag. If you assign an SGT to a user's account, the SGT is assigned to the user's traffic. After you configure FDM-managed device to connect to an ISE server and create the SGT, you can create SGT groups in Security Cloud Control and build access control rules around them. Note that you must configure ISE's SGT Exchange Protocol (SXP) mapping before you can associate an SGT to an FDM-managed device. See **Security Group Tag Exchange Protocol** in the Cisco Identity Services Engine Administrator Guide of the version you are currently running for more information.

When an FDM-managed device evaluates SGT as a traffic matching criteria for an access control rule, it uses the following priority:

1. The source SGT defined in the packet, if any. No destination matching is done using this technique. For the SGT to be in the packet, the switches and routers in the network must be configured to add them. See the ISE documentation for information on how to implement this method.
2. The SGT assigned to the user session, as downloaded from the ISE session directory. You need to enable the option to listen to session directory information for this kind of SGT matching, but this option is on by default when you first create the ISE identity source. The SGT can be matched to source or destination. Although not required, you would also normally set up a passive authentication identity rule, using the ISE identity source along with an AD realm, to collect user identity information.
3. The SGT-to-IP address mapping downloaded using SXP. If the IP address is within the range for an SGT, then the traffic matches the access control rule that uses the SGT. The SGT can be matched to source or destination.



Note You cannot use the information retrieved from ISE directly in an access control rule. Instead, you need to create SGT groups, which refer to the downloaded SGT information. Your SGT groups can refer to more than one SGT, so you can apply policy based on a relevant collections of tags if that is appropriate.

Version Support

Security Cloud Control currently supports SGT and SGT groups on FDM-managed devices running Version 6.5 and later. an FDM-managed device allows you to configure and connect to an ISE server in Version 6.5 and later but not does not support SGT configuration in the UI until Version 6.7.

From the FDM-managed UI, this means that an FDM-managed device running Version 6.5 or later can download SXP mappings of SGTs but cannot be manually added to objects or access control rules. To make changes to the SGTs for devices running Version 6.5 or Version 6.6, you must use the ISE UI. If the device

running Version 6.5 is onboarded to Security Cloud Control, however, you can see the current SGTs associated with the device and create SGT groups.

SGT in Security Cloud Control

Security Group Tags

SGTs are read-only in Security Cloud Control. You cannot create or edit an SGT in Security Cloud Control. To create an SGT, see the Cisco Identity Services Engine Administrator Guide of the version your are currently running.

SGT Groups



Note An FDM-managed device refers to groups of SGTs as SGT dynamic objects. In Security Cloud Control, these lists of tags are currently called SGT groups. You can create an SGT group in Security Cloud Control without referring to the FDM-managed device or ISE UI.

Use SGT groups to identify source or destination addresses based on an SGT assigned by ISE. You can then use the objects in access control rules for purposes of defining traffic matching criteria. You cannot use the information retrieved from ISE directly in an access control rule. Instead, you need to create SGT groups, which refer to the downloaded SGT information.

Your SGT groups can refer to more than one SGT, so you can apply policy based on relevant collections of tags if that is appropriate.

In order to create an SGT group in Security Cloud Control, you must have at least one SGT already configured and SGT mappings from an ISE server configured for the FDM-managed console of the device you want to use. Note that if more than one FDM-managed device is associated with the same ISE server, an SGT or SGT group can be applied to more than one device. If a device is not associated with an ISE server, you cannot include SGT objects in your access control rule, or apply an SGT group to that device configuration.

SGT Groups in Rules

SGT groups can be added to access control rules; they appear as source or destination network objects.

You can create an SGT group from the Objects page. See Create an SGT Group, on page 95 for more information.

Create an SGT Group

To create an SGT group that can be used for an access control rule, use the following procedure:

Before you begin

You must have the following configurations or environments configured prior to creating a security group tag (SGT) group:

- FDM-managed device must be running at least Version 6.5.

- You must configure the ISE identity source to subscribe to SXP mappings and enable deploy changes. To manage SXP mappings, see **Configure Security Groups and SXP Publishing in ISE** of the Firepower Device Manager Configuration Guide for the version you're using, Version 6.7 and later.
- All SGTs must be created in ISE. To create an SGT, see the Cisco Identity Services Engine Configuration Guide of the version your are currently running.

Edit an SGT Group

To edit an SGT group, use the following procedure:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the SGT group you want to edit by using object filters and search field.

Step 3 Select the SGT group and click the edit icon in the **Actions** pane.

Step 4 Modify the SGT group. Edit the name, description, or the SGTs associated with the group.

Step 5 Click **Save**.

Note
You cannot create or edit SGTs in Security Cloud Control, you can only add or remove them from an SGT group. To create or edit an SGT, see the Cisco Identity Services Engine Configuration Guide of the version you are currently running.

Add an SGT Group to an Access Control Rule

To add an SGT group to an access control rule, use the following procedure:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the **FTD** tab and select the device you want to add the SGT group to.

Step 5 In the**Management** pane, select **Policy**.

Step 6 Click the blue plus button for either the **Source** or **Destination** objects and select **SGT Groups**.

Step 7 Locate the SGT group(s) you want to edit by using object filters and search field.

Step 8 Click **Save**.

Step 9 Preview and Deploy Configuration Changes for All Devices.

Note
If you need to create an additional SGT group, click **Create New Object**. Fill in the required information mentioned in Create an FTD SGT Group and **Add** the SGT group to the rule.

Syslog server objects

FDM-managed devices have a limited capacity to store events. To maximize storage for events, you can configure an external server. A system log (syslog) server object identifies a server that can receive connection-oriented or diagnostic syslog messages. If you have a syslog server set up for log collection and analysis, you can use the Security Cloud Control to create objects to define them and use the objects in the related policies.

Create and Edit Syslog Server Objects

To create a new syslog server object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the **Create Object** button .

Step 3 Select **Syslog Server** under FDM-managed device object types

Step 4 Configure the syslog server object properties:

- **IP Address**—Enter the IP address of the syslog server.
- **Protocol Type**—Select the protocol that your syslog server uses to receive messages. If you select TCP, the system can recognize when the syslog server is not available, and stops sending events until the server is available again.
- **Port Number**—Enter a valid port number to use for syslog. If your syslog server uses default ports, enter 514 as the default UDP port or 1470 as the default TCP port. If the server does not use default ports, enter the correct port number. The port must be in the range 1025 to 65535.
- **Select an interface**—Select which interface should be used for sending diagnostic syslog messages. Connection and intrusion events always use the management interface. Your interface selection determines the IP address associated with syslog messages. Note that you can only select **one** of the options listed below. You cannot select both. Select one of the following options:
  - **Data Interface**—Use the data interface you select for diagnostic syslog messages. Select an interface from the generated list. If the server is accessible through a bridge group member interface, select the bridge group interface (BVI). If it is accessible through the Diagnostic interface (the physical management interface), we recommend that you select Management Interface instead of this option. You cannot select a passive interface. For connection and intrusion syslog messages, the source IP address will either be for the management interface, or for the gateway interface if you route through data interfaces.

- **Management Interface**—Use the virtual management interface for all types of syslog messages. The source IP address will either be for the management interface, or for the gateway interface if you route through data interfaces.

Step 5 Click **Add**.

Step 6 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit Syslog Server Objects

To edit an existing syslog server object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the desired syslog server object and select it. You can **filter** the object list by the syslog server object type.

Step 3 In the Actions pane, click **Edit**.

Step 4 Make the desired edits and click **Save**.

Step 5 Confirm the changes you made.

Step 6 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create a Syslog Server Object for Secure Logging Analytics (SaaS)

Create a syslog server object with the IP address, TCP port, or UDP port of the Secure Event Connector (SEC) you want to send events to. You would create one syslog object for every SEC that you have onboarded to your tenant but you would only send events from one rule to one syslog object representing one SEC.

Procedure

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the **Create Object** button .

Step 3 Select **Syslog Server** under FDM-managed device object types.

Step 4 Configure the syslog server object properties. To find these properties of the SEC, from the navigation pane on the left, choose **Tools & Services** > **Secure Connectors**. Then select the Secure Event Connector you want to configure the syslog object for and look in the Details pane on the right.

- **IP Address**—Enter the IP address of the SEC.

- **Protocol Type**—Select TCP or UDP.
- **Port Number**—Enter port 10125 if you selected TCP or 10025 if you selected UDP.
- **Select an interface**—Select the interface configured to reach the SEC.

Note
FDM-managed device supports one syslog object per IP address so you will have to choose between using TCP and UDP.

Step 5 Click **Add**.

ASA time range objects

A time range object defines a specific time that consists of a start time, an end time, and optional recurring entries. You use time range objects in network policies to provide time-based access to features or assets. Creating a time range object does not restrict access to the device. The configured times are local to the device.

You can add absolute or recurring time ranges to a time range object. Recurring ranges are periodic time ranges.

Note If a time range has both absolute and periodic values, Security Cloud Control evaluates the periodic values only after the absolute start time is reached and stops evaluating them after the absolute end time is reached.

Create an ASA time range object

Use the following procedure to create a time range object for an ASA device:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click + > **ASA** > **Time Range**.

Step 3 Enter an object name.

Step 4 Define a time range.

- Absolute Time Range: Enter a start time and an end time. A time range object can have only one absolute time range.
- Recurring Time Ranges: Click the + icon to add a periodic time range that repeats during the week. Select the frequency, days of the week, start time, and end time. A time range object can have multiple periodic ranges.

Note

Start and end times are optional. If no start time is configured, the time range starts immediately. If no end time is configured, the time range lasts indefinitely.

Step 5 Click **Add** to create the object.

Edit an ASA time range object

Use the following procedure to edit a time range object for an ASA device:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click edit .

Step 4 Edit the values as needed and click **Save**.

Step 5 If the object is currently used by any policies, Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 6 If the object is used in a policy on a device, review and deploy now the changes you made, or wait and deploy multiple changes at once.

Troubleshooting Objects

Resolve Duplicate Object Issues

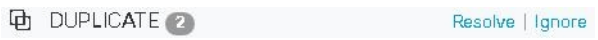
Duplicate objects are two or more objects on the same device with different names but the same values. These objects are usually created accidentally, serve similar purposes, and are used by different policies. After resolving duplicate object issues, Security Cloud Control updates all affected object references with the retained object name.

To resolve duplicate object issues:

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select one of the results. In the objects details panel, you will see the DUPLICATE field with the number of duplicates affected:



Step 3 Click **Resolve**. Security Cloud Control displays the duplicate objects for you to compare.

Step 4 Select two of the objects to compare.

Step 5 You now have these options:

- If you want to replace one of the objects with the other, click **Pick** for the object you to keep, click **Resolve** to see what devices and network policies will be affected, and then click **Confirm** if you are satisfied with the changes. Security Cloud Control keeps the object you selected as the replacement and deletes the duplicate.
- If you have an object in the list that you want to ignore, click **Ignore**. If you ignore an object, it will be removed from the list of duplicate objects that Security Cloud Control shows you.
- Click **Ignore All** if you want to keep the object but do not want Security Cloud Control to find it in a search for duplicate objects.

Step 6 Once the duplicate object issue has been resolved review and deploy the changes you made now, or wait and deploy multiple changes at once.

Resolving Inconsistent or Unused Security Zone Objects

Security zone objects can be marked inconsistent or unused like other objects. See Resolve Unused Object Issues and Resolve Inconsistent Object Issues for instructions on how to resolve these issues.

Resolve Unused Object Issues

Unused objects are objects that exist in a device configuration but are not referenced by another object, an access-list, or a NAT rule.

Resolve an Unused Object Issue

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select one or more unused objects.

Step 3 You now have these options:

- In the Actions pane, click **Remove** to remove the unused object from Security Cloud Control.
- In the Issues pane, click **Ignore.** If you ignore an object, Security Cloud Control will stop displaying it among the results of unused objects objects.

Step 4 If you removed the unused object, Preview and deploy configuration changes for all devices, on page 597 the changes you made now, or wait and deploy multiple changes at once.

Note
To resolve unused object issues in bulk, see Resolve Object Issues in Bulk.

Remove Unused Objects in Bulk

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select the unused objects you want to delete:

- Click the checkbox in the object table header row to select all the objects on the page.
- Select individual unused objects in the object table.

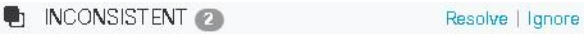
Step 3 In the Actions pane on the right, click **Remove** to remove all the unused objects you selected in Security Cloud Control. You can remove 99 objects at a time.

Step 4 Click **OK** to confirm you want to delete the unused objects.

Step 5 You have two choices to deploy these changes:

- Review and deploy the changes you made now, or wait and deploy multiple changes at once.
- Open the **Security Devices** page and find the devices that were affected by the change. Select all the devices affected by the change and, in the **Management** pane, click **Deploy All**. Read the warning and take the appropriate action.

Resolve Inconsistent Object Issues

Inconsistent objects 

are objects with the same name, but different values, on two or more devices. Sometimes users create objects in different configurations with the same name and content, but over time the values of these objects diverge, which creates the inconsistency.

Note: To resolve inconsistent object issues in bulk, see Resolve Object Issues in Bulk.

You can perform the following on inconsistent objects:

- **Ignore:** Security Cloud Control ignores the inconsistency between objects and retains their values. The objects will no longer be listed under the inconsistency category.
- **Merge:** Security Cloud Control combines all selected objects and their values into a single object group.
- **Rename:** Security Cloud Control allows you to rename one of the inconsistent objects and give it a new name.
- **Convert Shared Network Objects to Overrides:** Security Cloud Control allows you to combine inconsistent shared objects (with or without overrides) into a single shared object with overrides. The most common default value from the inconsistent objects is set as a default in the newly formed object.

Note If there are multiple common default values, one of them is selected as the default. The remaining default values and override values are set as overrides of that object.

- **Convert Shared Network Group to Additional Values:** - Security Cloud Control allows you to combine inconsistent shared network groups into a single shared network group with additional values. The criteria for this functionality is that the inconsistent network groups to be converted must have a minimum of one common object with the same value. All default values that match this criterion becomes the default values, and the remaining objects are assigned as additional values of the newly formed network group.

  For example, consider two inconsistent shared network groups. The first network group 'shared_network_group' is formed with 'object_1' (192.0.2.x) and 'object_2' (192.0.2.y). It also contains additional value 'object_3' (192.0.2.a). The second network group 'shared_network_group' is formed with 'object_1' (192.0.2.x) and additional value 'object_4' (192.0.2.b). On converting the shared network group to additional values, the newly formed group 'shared_network_group' contain 'object_1' (192.0.2.x) and 'object_2' (192.0.2.y)' as default values and 'object_3' (192.0.2.a) and 'object_4' (192.0.2.b) as additional values.



Note When you create a new network object, Security Cloud Control auto assigns its value as an override to an existing shared network object with the same name. This is also applicable when a new device is onboarded to Security Cloud Control.

The auto-assignment happens only when the following criteria are met:

1. The new network object must be assigned to a device.
2. Only one shared object with the same name and type must be existing in the tenant.
3. The shared object must already contain overrides.

To resolve inconsistent object issues:

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects** and choose an option.

Step 2 Select an inconsistent object. In the objects details panel, you will see the INCONSISTENT field with the number of objects affected:



Step 3 Click **Resolve**. Security Cloud Control displays inconsistent objects for you to compare.

Step 4 You now have these options:

- **Ignore All:**
  a. Compare the objects presented to you and on one of the objects, click **Ignore**. Or, to ignore all objects, click **Ignore All**.
  b. Click **OK** to confirm.
- **Resolve by merging objects:**
  a. Click **Resolve by Merging X Objects**.
  b. Click **Confirm**.

- **Rename:**
  a. Click **Rename**.
  b. Save your changes to affected network policies and devices and click **Confirm**.
- **Convert to Overrides (for inconsistent shared objects):** When comparing shared objects with overrides, the comparison panel shows only the default values in the **Inconsistent Values** field.
  a. Click **Convert to Overrides**. All inconsistent objects will be converted to a single shared object with overrides.
  b. Click **Confirm**. You can click **Edit Shared Object** to view the details of the newly formed object. You can use up and down arrows to move the values between default and override.
- **Convert to Additional Values (for inconsistent network groups):**
  a. Click **Convert to Additional Values**. All inconsistent objects will be converted to a single shared object with additional values.
  b. Save your changes to affected network policies and devices and click **Confirm**.

Step 5 After resolving the inconsistencies, review and deploy now the changes you made, or wait and deploy multiple changes at once.

Resolve Object Issues in Bulk

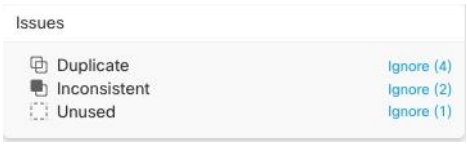
Important If the object becomes associated with another issue type at a later time, the ignore action you committed only affects the issues you selected at that time. For example, if you ignored an object because it was a duplicate and the object is later marked inconsistent, ignoring it as a duplicate object does not mean it will be ignored as an inconsistent object.

To ignore issues in bulk, follow this procedure:

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 In the Object table, select all the applicable objects you want to ignore. The Issues pane groups objects by issue type.



Step 3 Click **Ignore** to ignore issues by type. You must **Ignore** each issue type separately.

Step 4 Click **OK** to confirm you want to ignore those objects.

Network Address Translation

Each computer and device within an IP network is assigned a unique IP address that identifies the host. Because of a shortage of public IPv4 addresses, most of these IP addresses are private and not routable anywhere outside of the private company network. RFC 1918 defines the private IP addresses you can use internally that should not be advertised:

- 10.0.0.0 through 10.255.255.255
- 172.16.0.0 through 172.31.255.255
- 192.168.0.0 through 192.168.255.255

One of the main functions of Network Address Translation (NAT) is to enable private IP networks to connect to the Internet. NAT replaces a private IP address with a public IP address, translating the private addresses in the internal private network into legal, routable addresses that can be used on the public Internet. In this way, NAT conserves public addresses because it can be configured to advertise at a minimum only one public address for the entire network to the outside world.

Other functions of NAT include:

- Security-Keeping internal IP addresses hidden discourages direct attacks.
- IP routing solutions-Overlapping IP addresses are not a problem when you use NAT.
- Flexibility-You can change internal IP addressing schemes without affecting the public addresses available externally; for example, for a server accessible to the Internet, you can maintain a fixed IP address for Internet use, but internally, you can change the server address.
- Translating between IPv4 and IPv6 (Routed mode only)-If you want to connect an IPv6 network to an IPv4 network, NAT lets you translate between the two types of addresses.

You can use Security Cloud Control to create NAT rules for many different use cases. Use the NAT rule wizard or these topics to create different NAT rules:

Order of processing NAT rules

Network Object NAT and twice NAT rules are stored in a single table that is divided into three sections. Section 1 rules are applied first, then section 2, and finally section 3, until a match is found. For example, if a match is found in section 1, sections 2 and 3 are not evaluated. The following table shows the order of rules within each section.

Table 17: NAT Rule Table

Table Section	Rule Type	Order of Rules within the Section
Section 1	Twice NAT (ASA) Manual NAT (FTD)	Applied on a first match basis, in the order they appear in the configuration. Because the first match is applied, you must ensure that specific rules come before more general rules, or the specific rules might not be applied as desired. By default, twice NAT rules are added to section 1.
Section 2	Network Object NAT (ASA) Auto NAT (FTD)	If a match in section 1 is not found, section 2 rules are applied in the following order: **1.** Static rules. **2.** Dynamic rules. **Within each rule type, the following ordering guidelines are used:** **1.** Quantity of real IP addressesâ€”From smallest to largest. For example, an object with one address will be assessed before an object with 10 addresses. **2.** For quantities that are the same, then the IP address number is used, from lowest to highest. For example, 10.1.1.0 is assessed before 11.1.1.0. **3.** If the same IP address is used, then the name of the network object is used, in alphabetical order. For example, object "Arlington" is assessed before object "Detroit."
Section 3	Twice NAT (ASA) Manual NAT (FTD)	If a match is still not found, section 3 rules are applied on a first match basis, in the order they appear in the configuration. This section should contain your most general rules. You must also ensure that any specific rules in this section come before general rules that would otherwise apply.

For section 2 rules, for example, you have the following IP addresses defined within network objects:

- 192.168.1.0/24 (static)
- 192.168.1.0/24 (dynamic)
- 10.1.1.0/24 (static)
- 192.168.1.1/32 (static)
- 172.16.1.0/24 (dynamic) (object Detroit)
- 172.16.1.0/24 (dynamic) (object Arlington)

The resultant ordering would be:

- 192.168.1.1/32 (static)
- 10.1.1.0/24 (static)
- 192.168.1.0/24 (static)
- 172.16.1.0/24 (dynamic) (object Arlington)
- 172.16.1.0/24 (dynamic) (object Detroit)
- 192.168.1.0/24 (dynamic)

Network Address Translation wizard

The Network Address Translation (NAT) wizard helps you create NAT rules on your devices for these types of access:

- **Enable Internet Access for Internal Users**. You may use this NAT rule to allow users on an internal network to reach the internet.
- **Expose an Internal Server to the Internet**. You may use this NAT rule to allow people outside your network to reach an internal web or email server.

Prerequisites to "Enable Internet Access for Internal Users"

Before you create your NAT rule, gather this information:

- The interface that is closest to your users; this is usually called the "inside" interface.
- The interface closest to your Internet connection; this is usually called the "outside" interface.
- If you want to allow only specific users to reach the internet, you need the subnet addresses for those users.

Prerequisites to "Expose an Internal Server to the Internet"

Before you create your NAT rule, gather this information:

- The interface that is closest to your users; this is usually called the "inside" interface.
- The interface closest to your Internet connection; this is usually called the "outside" interface.
- The IP address of the server inside your network that you would like to translate to an internet-facing IP address.
- The public IP address you want the server to use.

What to do Next

See Create a NAT Rule by using the NAT Wizard, on page 108.

Create a NAT Rule by using the NAT Wizard

Before you begin

See Network Address Translation wizard, on page 107 for the prerequisites needed to create NAT rules using the NAT wizard.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Use the filter and search fields to find the device for which you want to create the NAT rule.

Step 6 In the **Management** area of the details panel, click **NAT** NAT.

Step 7 Click + > **NAT Wizard**.

Step 8 Respond to the NAT Wizard questions and follow the on-screen instructions.

- Before you can save the NAT rule, all IP addresses need to be defined as network objects.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Common use cases for NAT

Twice NAT and Manual NAT

Here are some common tasks that can be achieved using "Network Object NAT", also known as "Auto NAT":

- Enable a Server on the Inside Network to Reach the Internet Using a Public IP address, on page 109
- Enable Users on the Inside Network to Access the Internet Using the Outside Interface's Public IP Address, on page 110
- Make a Server on the Inside Network Available on a Specific Port of a Public IP Address, on page 111
- Translate a Range of Private IP Addresses to a Range of Public IP Addresses, on page 115

Network Object NAT and Auto NAT

Here is a common task that can be achieved using "Twice NAT", also know as "Manual NAT":

- Prevent a Range of IP Addresses from Being Translated When Traversing the Outside Interface, on page 117

Enable a Server on the Inside Network to Reach the Internet Using a Public IP address

Use Case

Use this NAT strategy when you have a server with a private IP address that needs to be accessed from the internet and you have enough public IP addresses to NAT one public IP address to the private IP address. If you have a limited number of public IP addresses, see Make a server on the inside network available to users on a specific port of a public IP address (that solution may be more suitable).

Strategy

Your server has a static, private IP address, and users outside your network have to be able to reach your server. Create a network object NAT rule that translates the static private IP address to a static public IP address. After that, create an access policy that allows traffic from that public IP address to reach the private IP address. Finally, deploy these changes to your device.

Before you begin

Before you begin, create two network objects. Name one object *servername*_inside and the other object *servername*_outside. The *servername*_inside network object should contain the private IP address of your server. The *servername*_outside network object should contain the public IP address of your server.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

a. Expand the Original Address menu, click **Choose**, and select the **servername_inside** object.

b. Expand the Translated Address menu, click **Choose**, and select the **servername_outside** object.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 For ASA, deploy a Network Policy rule or for FDM-managed device, deploy an access control policy rule to allow the traffic to flow from *servername*_inside to *servername*_outside.

Step 15 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Objects created by this procedure:

```
object network servername_outside
host 209.165.1.29
object network servername_inside
host 10.1.2.29
```

NAT rules created by this procedure:

```
object network servername_inside
 nat (inside,outside) static servername_outside
```

Enable Users on the Inside Network to Access the Internet Using the Outside Interface's Public IP Address

Use Case

Allow users and computers in your private network to connect to the internet by sharing the public address of your outside interface.

Strategy

Create a port address translation (PAT) rule that allows all the users on your private network to share the outside interface public IP address of your device.

After the private address is mapped to the public address and port number, the device records that mapping. When incoming traffic bound for that public IP address and port is received, the device sends it back to the private IP address that requested it.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click + **Network Object NAT.**

Step 8 In section 1, **Type**, select **Dynamic.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **any** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions :

a. Expand the Original Address menu, click **Choose** and select the **any-ipv4** or **any-ipv6** object depending on your network configuration.

b. Expand the Translated Address menu, and select **interface** from the available list. Interface indicates to use the public address of the outside interface.

Step 11 For an FDM-managed device, in section 5, **Name**, enter a name for the NAT rule.

Step 12 Click **Save**.

Step 13 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Objects created by this procedure:

```
object network any_network
subnet 0.0.0.0 0.0.0.0
```

NAT rules created by this procedure:

```
object network any_network
nat (any,outside) dynamic interface
```

Make a Server on the Inside Network Available on a Specific Port of a Public IP Address

Use Case

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Prerequisites

Before you begin, create three separate network objects, one each for an FTP, HTTP, and SMTP server. For the sake of the following procedures, we call these objects **ftp-server-object**, **http-server-object**, and **smtp-server-object**.

NAT Incoming FTP Traffic to an FTP Server

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the **ftp**-server-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **ftp, ftp.**



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here is the entry that is created and appears in the ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network ftp-object
host 10.1.2.27
```

NAT rule created by this procedure

```
object network ftp-object
nat (inside,outside) static interface service tcp ftp ftp
```

NAT Incoming HTTP Traffic to an HTTP Server

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Before you begin

Before you begin, create a network object for the http server. For the sake of this procedure, we will call the object, **http-object**.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the **http**-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **http**, http.



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network http-object
host 10.1.2.28
```

NAT rule created by this procedure

```
object network http-object
nat (inside,outside) static interface service tcp www www
```

NAT Incoming SMTP Traffic to an SMTP Server

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Before you begin

Before you begin, create a network object for the smtp server. For the sake of this procedure, we will call the object, **smtp-object**.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click + > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the smtp-server-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **smtp**, **smtp.**



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network smtp-object
host 10.1.2.29
```

NAT rule created by this procedure

```
object network smtp-object
nat (inside,outside) static interface service tcp smtp smtp
```

Translate a Range of Private IP Addresses to a Range of Public IP Addresses

Use Case

Use this approach if you have a group of specific device types, or user types, that need to have their IP addresses translated to a specific range so that the receiving devices (the devices on the other end of the transaction) allow the traffic in.

Translate a Pool of Inside Addresses to a Pool of Outside Addresses

Before you begin

Create a network object for the pool of private IP addresses you want to translate and create a network object for the pool of public addresses you want to translate those private IP addresses into.

For the ASA, the "original address" pool, (the pool of private IP addresses you want to translate) can be a network object with a range of addresses, a network object that defines a subnet, or a network group that includes all the addresses in the pool. For the FTD, the "original address" pool can be a network object that defines a subnet or a network group that includes all the addresses in the pool.

Note For the ASA FTD, the network group that defines the pool of "translated address" cannot be a network object that defines a subnet.

For the sake of the following procedure, we named the pool of private addresses, **inside_pool** and name the pool of public addresses, **outside_pool.**

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT**.

Step 8 In section 1, **Type**, select **Dynamic** and click **Continue**.

Step 9 In section 2, **Interfaces**, set the source interface to **inside** and the destination interface to **outside**. Click **Continue**.

Step 10 In section 3, **Packets**, perform these tasks:

- For the Original Address, click **Choose** and then select the **inside_pool** network object (or network group) you made in the prerequisites section above.
- For the Translated Address, click **Choose** and then select the **outside_pool** network object (or network group) you made in the prerequisites section above.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

These are the entries that would appear in an ASA's saved configuration file as a result of these procedures.

Note This does not apply to FDM-managed devices.

Objects created by this procedure

```
object network outside_pool
    range 209.165.1.1 209.165.1.255
object network inside_pool
    range 10.1.1.1 10.1.1.255
```

NAT rules created by this procedure

```
object network inside_pool
nat (inside,outside) dynamic outside_pool
```

Prevent a Range of IP Addresses from Being Translated When Traversing the Outside Interface

Use Case

Use this Twice NAT use case to enable site-to-site VPN.

Strategy

You are translating a pool of IP addresses to itself so that the IP addresses in one location on the network arrives unchanged in another.

Create a Twice NAT Rule

Before you begin

Create a network object or network group that defines the pool of IP addresses you are going to translate to itself. For the ASA, the range of addresses can be defined by a network object that uses an IP address range, a network object that defines a subnet, or a network group object that includes all the addresses in the range. For the FTD, the range of addresses can be defined by a network object that defines a subnet or a network group object that includes all the addresses in the range.

For the sake of the following procedure, we are going call the network object or network group, Site-to-Site-PC-Pool.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Twice NAT.**.

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, make these changes:

- Expand the Original Address menu, click **Choose**, and select the Site-to-Site-PC-Pool object you created in the prerequisites section.
- Expand the Translated Address menu, click **Choose**, and select the Site-to-Site-PC-Pool object you created in the prerequisites section.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 For an ASA, create a crypto map. See CLI Book 3: Cisco ASA Series VPN CLI Configuration Guide and review the chapter on LAN-to-LAN IPsec VPNs for more information on creating a crypto map.

Step 15 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

These are the entries that would appear in an ASA's saved configuration file as a result of these procedures.



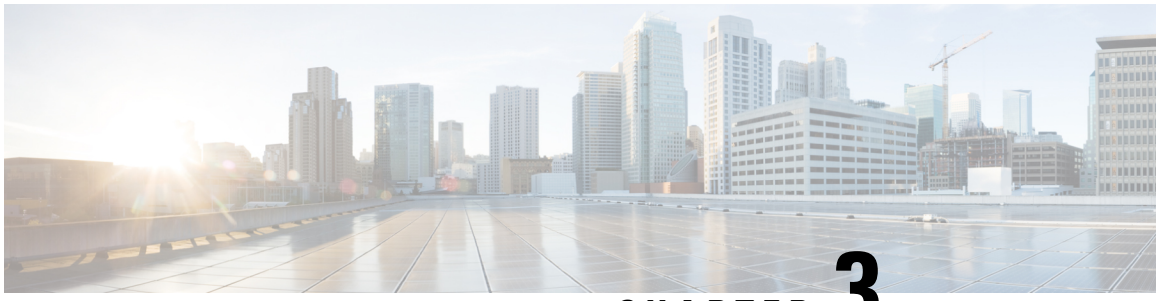
Note This does not apply to FDM-managed devices.

Objects created by this procedure

```
object network Site-to-Site-PC-Pool
range 10.10.2.0 10.10.2.255
```

NAT rules created by this procedure

```
nat (inside,outside) source static Site-to-Site-PC-Pool Site-to-Site-PC-Pool
```



CHAPTER 3

Manage Tenants and Users

- Manage a Security Cloud Control Tenant, on page 119
- Manage Users in Security Cloud Control, on page 141
- Active Directory Groups in User Management, on page 141
- Create a New Security Cloud Control User, on page 147
- **Understand** user roles in Security Cloud Control Firewall Management, on page 153
- Add a User Account to Security Cloud Control, on page 157
- Edit a User Record for a User Role, on page 158
- Delete a User Record for a User Role, on page 159

Manage a Security Cloud Control Tenant

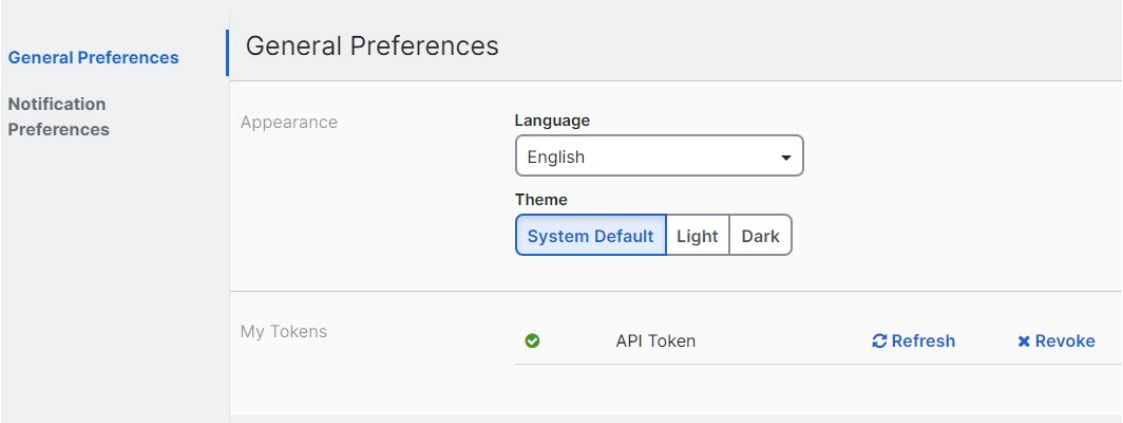
Security Cloud Control gives you the ability to customize certain aspects of your tenant, users, and notification preferences. Review the following settings available for customized configuration:

Configure User Preferences

See the following topics regarding general Security Cloud Control Settings:

General Preferences

Select the desired language and theme for the Security Cloud Control UI to display in. This selection only affects the user who makes this change.



Change the Security Cloud Control Web Interface Appearance

You can change the way the web interface appears.

Procedure

Step 1 From the drop-down list under your username, choose **Preferences**.

Step 2 In the **General Preferences** area, select a **Theme**:

- **Light**
- **Dark**

Manage user notification preferences

Security Cloud Control Firewall Management generates notifications whenever a device linked to your tenant encounters a specific event. This includes actions taken by the device, expiring or expired device certificates, or the start, completion, or failure of a report generation task. By default, these notifications are enabled and visible to all users associated with the tenant, regardless of their role. You have the option to customize your personal notification preferences to display only the alerts that interest you. These preferences are unique to you and do not impact other users connected to the tenant.

Note Changes made to the notifications listed below are automatically updated in real time and do not require deployment.

View your personal preferences in the **Username ID** > **Preferences** > **Notification Preferences** page. Your Username ID is always located in the upper right corner of Security Cloud Control across all pages. From this page you can configure the following "**Notify Me in Security Cloud Control When**" alerts.

Device workflow alerts

- **Deployments** - This action does not include integration instances for SSH or IOS devices.

- **Backups** - This action is only applicable for FDM-managed devices.
- **Upgrades** - This action is only applicable for ASA and FDM-managed devices.
- **Migrate Firewall Threat Defense to cloud** - This action is applicable when changing the Firewall Threat Defense

  device manager from Firewall Management Center to Security Cloud Control.

Device event alerts

- **Went offline** - Applies to all devices associated with your tenant.
- **Back online** - Applies to all the devices associated with your tenant.
- **Conflict detected** - Applies to all the devices associated with your tenant.
- **HA state changed** - Indicates the device within an HA or failover pair, the current state, and the state it changed from. This action applies to all HA and failover configurations associated with your tenant.
- **Site-to-Site session disconnected** - Applies to all site-to-site VPN configurations configured in your tenant.

Event search report alerts

- **Report generation started**: Notifies you when a report generation task starts. This applies to both immediate and scheduled search reports.
- **Report generation completed**: Notifies you when a report generation task ends. This applies to both immediate and scheduled search reports.
- **Report generation failed**: Notifies you when a report generation task fails. This applies to both immediate and scheduled search reports. Check the parameters or query and try again.

Application insights alerts

- **Application available**: Notifies you when a monitored application becomes available.
- **Application unavailable**: Notifies you when a monitored application becomes unavailable.

Opt out of notifications

By default, all notification types are enabled. To stop receiving a notification type, clear that notification and click **Save**.

Manage email notifications

Enable the `Email notifications` toggle button to receive email for the alerts that you select.

By default, **Use Security Cloud Control notification settings above** is selected. When this option is selected, email notifications match the same notifications and events that you selected in the **Notify Me in Security Cloud Control When** sections.

If you want email notifications for only some alerts, clear **Use Security Cloud Control notification settings above**, select the alert types that you want to receive by email, and then click **Save**.

View Security Cloud Control notifications

Click the notifications icon  to view the most recent alerts that have occurred or affected the devices that you onboarded to your tenant. The settings that you choose on the Notification Settings page determine the notification types that appear in Security Cloud Control Firewall Management.

This drop-down page is grouped into three tabs: Overview, All, and Dismissed.

Overview tab

The **Overview** tab displays a combination of the most recent high-priority alerts and events to which you are subscribed. High priority events are the following:

- Deployment Failed
- Backup Failed
- Upgrade Failed
- Migrate FTD to Cloud-Delivered Firewall Management Center Failed
- Device went offline
- Device HA state changed
- Device certificates expiring

You can configure which alerts you want to receive by clicking the Notification Settings in the Notifications window or by selecting **UserID** > **User Preferences** page. The User ID button in the upper right corner of the dashboard.

All tab

Displays all notifications, regardless of priority, including email subscription notifications and all high-priority items.

Dismissed tab

Displays notifications that you dismissed. You can dismiss individual notifications by clicking the "**x**" of the notification.

Opting to **Dismiss** notifications from the drop-down menu dismisses notifications from **both** the "Overview" and "All" tabs. They will remain in the **Dismiss** tab for 30 days, after which they will be removed from Security Cloud Control.

Search notifications

When viewing the notifications drop-down window, for any of the tabs mentioned above, you can use the search bar at the top of the drop-down to query for key words or alerts.

Configure general settings

Use **Administration** > **General Settings** to manage organization-wide settings that affect multiple managed devices and users in your managed organization.

Note You do not see toggle buttons for features that are not enabled for your managed organization.

Enable the option to auto-accept device changes

When this setting is enabled, Security Cloud Control Firewall Management automatically accepts changes that users make directly on the device. If you leave this setting disabled, or disable it later, you must review each device conflict before you accept it.

Follow these steps to enable automatic acceptance of device changes:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Turn on the **Enable the option to auto-accept device changes** toggle button.

Enable object sharing with Multicloud Defense

Enable this setting to share Multicloud Defense network objects from Security Cloud Control Firewall Management.

Follow these steps to enable object sharing with Multicloud Defense:

Procedure

Step 1 Choose **Settings** > **General SettingsAdministration** > **General Settings**.

Step 2 Turn on the **Enable object sharing with Multicloud Defense** toggle button.

Set the default conflict detection interval

This interval determines the frequency at which Security Cloud Control polls onboarded devices for changes. The selection applies to all devices managed in this tenant. You can change this option at any time.

Note This selection can be overridden via the **Conflict Detection** option available from the **Security Devices** page after you have selected one or multiple devices.

Follow these steps to set the default conflict detection interval:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 From the **Default conflict detection interval** drop-down list, select a time value.

Enable scheduled automatic deployments

Enabling the option to schedule automatic deployments allows you to schedule future deployments at a date and time when it is convenient. Once you enable this option, you can schedule a single automatic deployment or set up recurring automatic deployments.

Changes you make on Security Cloud Control for a device are not automatically deployed to the device if it has pending changes . If a device is not in the **Synced** state, such as **Conflict Detected** or **Not Synced**, scheduled deployments are not executed. The jobs page lists any instance where a scheduled deployment fails.

If you turn off **Enable the Option to Schedule Automatic Deployments**, all scheduled deployments are deleted.



Important If you use Security Cloud Control to create more than one scheduled deployment for a device, the new deployment overwrites the existing deployment. If you create more than one scheduled deployment for a device using the API, you **must** delete the existing deployment before scheduling the new deployment.

Follow these steps to enable scheduled automatic deployments:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Turn on the **Enable the option to schedule automatic deployments** toggle button to enable it.

Manage web analytics

Web analytics provides anonymous product usage information to Cisco based on page hits. The information includes pages viewed, the time spent on a page, browser versions, product version, and device hostname. This data helps Cisco determine feature usage patterns and improve the product. All usage data is anonymous and no sensitive data is transmitted.

Web analytics is enabled by default. To disable web analytics or re-enable it in the future, complete these steps:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Turn on the **Web Analytics** toggle button to enable it.

Enable event data sharing with Talos

Share malicious event data from your device with Talos, Cisco's threat intelligence organization. Sharing event data allows Talos to improve threat detection and response capabilities, provide more targeted security updates for your network, and deliver better protection against emerging threats.

For more information about Talos, see the Cisco Talos product page.



Note The **Enable event data sharing with Talos** setting in Security Cloud Control and the **Talos Threat Hunting Telemetry** option in Cloud-Delivered Firewall Management Center are separate settings. The setting in Security Cloud Control shares malicious event data from your devices with Talos.

To add threat-hunting rules to the global intrusion policy and send events from those rules to Talos, enable **Talos Threat Hunting Telemetry** in Cloud-Delivered Firewall Management Center at **Administration > Configuration > Intrusion Policy Preferences**.

Enabling the **Enable event data sharing with Talos** toggle button does not automatically activate the **Talos Threat Hunting Telemetry** feature in Cloud-Delivered Firewall Management Center. For the best results with this feature, also enable the **Talos Threat Hunting Telemetry** in Cloud-Delivered Firewall Management Center. For more information, see Set Intrusion Policy Preferences.

Sharing event data with Talos is enabled by default. To opt out, follow this procedure:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Turn off the **Enable event data sharing with Talos** toggle button to disable this setting.

Note
Sharing event data enables Talos to provide relevant security insights for your network. Disabling this setting might limit your ability to fully leverage Talos's capabilities and could affect your network's defense against evolving threats.

Set the FDM Default recurring backup schedule

Use this setting to configure a default recurring backup schedule for your devices. When you schedule a backup for a device, you can use the default values or customize them. If you change the default recurring backup schedule, existing scheduled backups keep their current recurring settings.

Follow these steps to set the FDM default recurring backup schedule:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Under the **FDM Default Recurring Backup Schedule** section, from the **Frequency** drop-down, select daily, weekly, or monthly backup.

Step 4 Select the time of day for the backup. Enter the time using the 24-hour format in Coordinated Universal Time (UTC); for example, 22:00 (10:00 PM UTC).

Step 5 For weekly backups, select the days of the week for the backup. For monthly backups, select the **Days of Month** field and add the days when the backup should run. If you enter day 31 for a month with fewer than 31 days, the backup will not run for that month. Enter a name and description for the backup schedule.

Step 6 Click **Save**.

View firewall management instance details

Firewall Management Instance Details are helpful if you need to contact the Cisco Technical Assistance Center (TAC). You can copy these tenant details by clicking the copy icon.

- **Firewall Management Instance Name**: The display name of the firewall management instance.
- **Firewall Management Instance ID**: The system-generated unique identifier for the firewall management instance in Cisco Security Cloud Control.
- **Secure Services Exchange ID**: The unique identifier for the firewall management instance in the Secure Services Exchange environment. Cisco uses this value for service integration and backend correlation across cloud services.
- **Security Cloud Control Organization ID**: The unique identifier of the Security Cloud Control organization associated with the firewall management instance.

Tenant Name

Your tenant name also identifies your tenant. Note that the tenant name is not the organization name. This information will be helpful if you need to contact the Cisco Technical Assistance Center (TAC).

Use the Security Cloud Control Firewall Management platform navigator

The platform navigator is a nine-block applications cross-launcher ( ) that appears on the top-right corner of Security Cloud Control. You can readily cross-launch to these Cisco networking and security applications:

Networking applications

- **Catalyst**: Cisco Catalyst products include a wide variety of network switches, wireless controllers, wireless access points, and edge platforms and routers, supporting enterprise-class business needs to heavy-duty and rugged networking environments.
- **Intersight**: Cisco Intersight is a cloud operations platform that consists of optional, modular capabilities of advanced infrastructure, workload optimization, and Kubernetes services. Cisco Intersight infrastructure services include the deployment, monitoring, management, and support of your physical and virtual infrastructure. It supports Cisco Unified Computing System (Cisco UCS), Cisco HyperFlex hyperconverged infrastructure (HCI), and other third-party Intersight-connected targets.
- **IoT Operations Dashboard**: Cisco IoT Operations Dashboard is a cloud-based IoT services platform that empowers operations teams to securely connect, maintain, and gain insights from industrial networking devices and connected industrial assets at massive scale. With one comprehensive view of all their connected industrial assets, operations teams can uncover valuable insights that help them streamline operations and drive business continuity.
- **Meraki**: Cisco Meraki is an IT and IoT cloud-managed platform that provides a centralized management platform for Cisco Meraki devices.
- **Spaces**: Cisco Spaces is a cloud-based location services platform through which organizations can gain insights into how people and things move throughout their physical spaces. With these insights, they can deliver contextual engagements that are valuable and relevant. Besides looking at where people go, organizations can also drive operational efficiencies by monitoring the location, movement, and utilization of assets.
- **ThousandEyes**: Cisco ThousandEyes is a cloud service suite that helps monitor and measure the availability and performance of web applications, services, and networks. It provides end-to-end visibility from any user to any application over any network, enabling enterprises to swiftly get to the source of issues, resolve them faster, and manage performance effectively.
- **Workflows**: Cisco Workflows is a cloud-hosted automation application that is part of the larger Cisco Networking Cloud vision. It provides an entitlement to cross-domain automation capabilities for Cisco customers. It streamlines repetitive and error-prone tasks across both Cisco and third-party applications using custom and premade automation templates, as well as various adapter options that can be provided by Cisco or built independently, reaching targets in the cloud or on-premises.

Security applications

- **Duo Security**: Cisco Duo is a user-centric zero-trust security platform with two-factor authentication to protect access to sensitive data for all users, devices, and applications. It offers features such as adaptive policies, single sign-on (SSO), and advanced endpoint visibility, making it a comprehensive solution for securing remote access and maintaining business continuity.
- **Secure Access**: Cisco Secure Access simplifies IT operations through a single, cloud-managed console, unified client, centralized policy creation, and aggregated reporting. Extensive security capabilities converged in one solution (ZTNA, SWG, CASB, FWaaS, DNS security, RBI, and more) mitigate security risk by applying zero trust principles and enforcing granular security policies. Market leading Talos threat intelligence fuels unmatched threat blocking to mitigate risk and speed investigations.
- **Secure Endpoint**: Cisco Secure Endpoint, formerly known as Cisco AMP for Endpoints, is a cloud-managed endpoint security solution designed to prevent breaches and rapidly detect, contain, and remediate threats. It instantly checks your files against a cloud-based scanner with advanced tracking

features. These features enable security analysts to identify and isolate initial outbreak sources. The solution also provides retrospective quarantine for files found to be malicious.

- **Cisco Security Provisioning and Administration**: Cisco Security Provisioning and Administration is a web application that provides centralized management of Cisco Secure product instances, user identity, and user access management across Cisco Security Cloud. Security Cloud Control administrators can create new Security Cloud enterprises, manage users in an enterprise, claim domains, and integrate their organization's SSO identity provider, among other tasks.
- **XDR**: Cisco Extended Detection and Response (XDR) is a cloud-based solution designed to simplify security operations and empower security teams to detect, prioritize, and respond to sophisticated threats. By integrating both Cisco and third-party security solutions into a unified platform, Cisco XDR offers a comprehensive approach to threat management. Integrated with the threat intelligence provided by Talos, Cisco XDR enriches incident data with additional context and asset insights, reducing false positives and enhancing overall threat detection, response, and forensic capabilities.

Tenant Notification Settings

On the Security Cloud Control toolbar, click the notification button .

All users associated with your tenant will automatically see these alerts. In addition, some or all of these alerts can be emailed to you.



Note You must have an **Super Administrator** user role to change these settings. See User Roles for more information.

Email Subscribers

Add or modify the emails that receive alerts from your Security Cloud Control tenant. See Enable Email Subscribers, on page 128 for more information.

Service Integrations

Enable Incoming Webhooks on your messaging app and receive Security Cloud Control notifications directly to your app dashboard. See Enable Service Integrations for Security Cloud Control Notifications for more information.

Enable Email Subscribers

An email notification from Security Cloud Control denotes the type of action and the affected devices.



Warning Be sure to enter the correct email if you are adding a mailer. Security Cloud Control does not check email addresses against known users associated with your tenant.

Add an Email Subscription

Before you begin

You must be an **Admin** to view the email subscription list, and a **SuperAdmin** to add, remove, or edit email subscriptions.

Procedure

Step 1 Log into Security Cloud Control.

Step 2 Navigate to **Settings** > **Notification Settings**.

Step 3 In the left pane, click **Administration** > **Notification Settings**.

Step 4 Click the **+** icon in the upper right corner of the page.

Step 5 Enter a valid email address in the text field.

Step 6 Check and uncheck the appropriate checkboxes for events and alerts you want the subscriber to be notified about.

Step 7 Click **Save**. At any point, click **Cancel** to create the new email subscription for the tenant.

Edit Email Subscriptions

Before you begin

You must be an **Admin** to view the email subscription list, and a **SuperAdmin** to add, remove, or edit email subscriptions.

Procedure

Step 1 Log into Security Cloud Control.

Step 2 Navigate to **Settings** > **Notification Settings**.

Step 3 In the left pane, click **Administration** > **Notification Settings**.

Step 4 Locate the email address you want to enable to edit for email subscriptions.

Step 5 Click the **Edit** icon.

Step 6 Edit the following attributes for Security Cloud Control to send alerts to the configured email address:

- **Email address**
- **Device Workflows**
- **Device Events**
- **Event Log Reports**

Step 7 Click **Ok**. At any point, click **Cancel** to negate any changes made to the email subscription.

Delete an Email Subscription

Use the following procedure to delete a mailer from the email subscription list.:

Before you begin

You must be an **Admin** to view the email subscription list, and a **SuperAdmin** to add, remove, or edit email subscriptions.

Procedure

Step 1 Log into Security Cloud Control.

Step 2 Navigate to **Settings** > **Notification Settings**.

Step 3 In the left pane, click **Administration** > **Notification Settings**.

Step 4 Locate the user you want to remove from email subscriptions for the tenant.

Step 5 Click the **Remove** icon for the user you want to remove.

Step 6 Confirm you want to remove the user from the subscription list. Note that this does not affect the user functionality in any way.

Enable Service Integrations for Security Cloud Control Notifications

Enable service integration to forward Security Cloud Control notifications through a specified messaging application or service. You need to generate a webhook URL from your messaging application and point Security Cloud Control to that webhook in Security Cloud Control's **Notification Settings** page to receive notifications.

Security Cloud Control natively supports Cisco Webex, Microsoft Teams, and Slack as service integrations. Messages sent to these services are specially formatted for channels and automated bots.

Note You must check the appropriate boxes for the notifications you want to receive per webhook.

Incoming Webhooks for Webex Teams

Before you begin

Security Cloud Control notifications appear in a designated workspace or as an automated bot in a private message. You must have the following before completing this procedure:

- A Webex account.
- A Security Cloud Control account and tenant.

Use the following procedure to allow incoming webhooks for Webex Teams:

Procedure

Step 1 Open the Webex apphub.

Step 2 Click **Connect** at the top of the page.

Step 3 Scroll to the bottom of the page and configure the following:

- **Webhook name** - Provide a name to identify the messages provided by this application.
- **Select a space** - Use the drop-down menu to choose a Webex **Space**. The Space must already exist in Webex team and you must have access to this space. If a space does not exist, you can create a new space in Webex Teams and refresh the application's configuration page to display the new space.

Note
If a Webex incoming webhook has been configured in the past and you are re-enabling it, the previous webhooks are preserved at the bottom of this page. You can delete previous webhooks if they are no longer needed or if the Webex space no longer exists.

Step 4 Select **Add**. The Webex Space you chose will receive a notification that the application is added.

Step 5 Copy the Webhook URL.

Step 6 Log into Security Cloud Control.

Step 7 From the navigation bar to the left, click **Settings** > **Notification Settings**.

Step 8 In the left pane, click **Administration** > **Notification Settings**.

Step 9 Examine and confirm the notifications that are checked are correct. If they are not, we strongly recommend modifying the notification selection before you connect to a service integration.

Step 10 Scroll to **Service Integrations**.

Step 11 Click the blue plus button.

Step 12 Enter a **Name**. This name appears in Security Cloud Control as a configured service integration. It does not appear in any events forwarded to the configured service.

Step 13 Expand the drop-down menu and select **Webex** as the Service Type.

Step 14 Paste the webhook URL that you generated from the service.

Step 15 Click **OK**.

Incoming Webhooks for Microsoft Teams

Security Cloud Control can forward notifications to Microsoft Teams. These messages are displayed either in a designated channel or as an automated bot in a private chat message in Microsoft Teams. To enable this functionality, you must generate a webhook URL from Microsoft Teams and point Security Cloud Control to that webhook. For more information about adding incoming webhooks to a Microsoft Teams channel, see Create incoming webhooks with Workflows for Microsoft Teams.

Prerequisites

These are the prerequisites to allow Security Cloud Control notifications in Microsoft Teams:

- A Microsoft Teams account.
- A Security Cloud Control account and tenant.

Use this procedure to generate a webhook URL in Microsoft Teams and enable notifications from Security Cloud Control:

Procedure

Step 1 Log in to your Microsoft Teams account.

Step 2 In the **New Teams** client, click **Teams** and navigate to the channel in which you want to add an incoming webhook.

Step 3 Click **More options •••** next to the channel name.

Step 4 Click **Workflows**.

Step 5 Click **Post to a channel when a webhook request is received**.

Step 6 Provide a name for the webhook and click **Next**.

Step 7 Choose the channel where notifications must be posted.

If you use this workflow from a Microsoft Teams chat or channel, these fields get populated automatically.

Step 8 After you enter the required details, click **Add workflow**.

Step 9 Copy the unique webhook URL from the dialog box that is displayed. The URL maps to the channel. You can use it to send information to Teams.

Step 10 Log into Security Cloud Control.

Step 11 From the left pane, click **Settings** > **Notification Settings**.

Step 12 In the left pane, click **Administration** > **Notification Settings**.

Step 13 Scroll to **Service Integrations**.

Step 14 Click the blue plus button.

Step 15 Enter a **Name**.

This name is displayed in Security Cloud Control as a configured service integration. However, it does not appear in any of the events forwarded to the configured service.

Step 16 Expand the drop-down list, and select **Microsoft Teams** as the **Service Type**.

Step 17 Paste the webhook URL generated from Microsoft Teams into **URL**.

Step 18 Under **Send Alerts When**, examine and confirm that the selected notifications are correct. If not, modify the notification selection before proceeding.

Step 19 Click **Save**.

Incoming Webhooks for Slack

Security Cloud Control notifications appear in a designated channel or as an automated bot in a private message. For more information on how Slack handles incoming webhooks, see Slack Apps for more information.

Use the following procedure to allow incoming webhooks for Slack:

Procedure

Step 1 Log into your Slack account.

Step 2 In the panel to the left, scroll to the bottom and select **Add Apps**.

Step 3 Search application directory for **Incoming Webhooks** and locate the app. Select **Add**.

Step 4 If you are not the admin of your Slack workspace, you must send a request to the admin of your org and wait for the app to be added to your account. Select **Request Configuration**. Enter an optional message and select **Submit Request**.

Step 5 Once the Incoming Webhooks app is enabled for your workspace, refresh the Slack settings page and select **Add New Webhook to Workspace**.

Step 6 Use the drop-down menu to select the Slack channel you want the Security Cloud Control notifications to appear in. Select **Authorize**. If you navigate away from this page while waiting for the request to get enabled, simply log into Slack and select the workspace name in the upper left corner. From the drop-down menu, select **Customize Workspace** and select **Configure Apps**. Navigate to **Manage** > **Custom Integrations**. Select **Incoming Webhooks** to open app's landing page and then select **Configuration** from the tabs. This lists all the users within your workspace that has this app enabled. You can only see and edit your account's configuration. Select your workspace name to edit the configuration and move forward.

Step 7 The Slack settings page redirects you to the configuration page for the app. Locate and copy the webhook URL.

Step 8 Log into Security Cloud Control.

Step 9 From the navigation bar to the left, click **Settings** > **Notification Settings**.

Step 10 In the left pane, click **Administration** > **Notification Settings**.

Step 11 Examine and confirm the notifications that are checked are correct. If they are not, we strongly recommend modifying the notification selection before you connect to a service integration.

Step 12 Scroll to **Service Integrations**.

Step 13 Click the blue plus button.

Step 14 Enter a **Name**. This name appears in Security Cloud Control as a configured service integration. It does not appear in any events forwarded to the configured service.

Step 15 Expand the drop-down menu and select **Slack** as the Service Type.

Step 16 Paste the webhook URL that you generated from the service.

Step 17 Click OK.

Incoming Webhooks for a Custom Integration

Before you begin

Security Cloud Control does not format messages for custom integration. If you opt to integrate a custom service or application, Security Cloud Control sends a JSON message.

Refer to the service's documentation on how to enable incoming webhooks and generate a webhook URL. Once you have a webhook URL, use the procedure below to enable webhooks:

Procedure

Step 1 Generate and copy the webhook URL from the custom service or application of your choice.

Step 2 Log into Security Cloud Control.

Step 3 From the navigation bar to the left, click **Settings** > **Notification Settings**.

Step 4 In the left pane, click **Administration** > **Notification Settings**.

Step 5 Examine and confirm the notifications that are checked are correct. If they are not, we strongly recommend modifying the notification selection before you connect to a service integration.

Step 6 Scroll to **Service Integrations**.

Step 7 Click the blue plus button.

Step 8 Enter a **Name**. This name appears in Security Cloud Control as a configured service integration. It does not appear in any events forwarded to the configured service.

Step 9 Expand the drop-down menu and select **Custom** as the Service Type.

Step 10 Paste the webhook URL that you generated from the service.

Step 11 Click OK.

View logging settings

Use **Logging Settings** to check current logging usage for your tenant.

The page shows:

- Your monthly event logging limit.
- The number of days until the limit resets.
- Stored logging usage, which represents the compressed event data that the Cisco cloud received.

Click **View Historical Usage** to review the logs that your tenant received during the last 12 months.

The page also includes links that you can use to request additional storage.

Integrate Your SAML Single Sign-On with Security Cloud Control

Security Cloud Control uses Cisco Secure Sign-On as its SAML single sign-on identity provider (IdP) and Duo Security for multifactor authentication (MFA). This is Security Cloud Control's preferred authentication method.

If, however, customers want to integrate their own SAML single sign-on IdP solution with Security Cloud Control, they can as long as their IdP supports SAML 2.0 and identity provider-initiated workflow.

To integrate your own or third-party identity provider (IdP) with Cisco Security Cloud Sign On, see Cisco Security Cloud Sign On Identity Provider Integration Guide.

If you need more support to integrate your own SAML solution with Security Cloud Control, contact support and create a case.

Attention When you open a case, ensure that you choose **Manually Select A Technology** and select **SecureX - Sign-on and Administration** for your request to reach the right team.

Renew SSO Certificate

Your Identity Provider (IdP) is usually integrated with SecureX SSO. Open a Cisco TAC case and provide the metadata.xml file. For more information, see Cisco SecureX Sign-On Third-Party Identity Provider Integration Guide.

Attention When you open a case, ensure that you choose **Manually Select A Technology** and select **SecureX - Sign-on and Administration** for your request to reach the right team.

(legacy only) If your Identity Provider (IdP) integration is directly with Security Cloud Control, open a support ticket with Security Cloud Control TAC and provide the metadata.xml file.

My Tokens

See API Tokens for more information.

API Tokens

Developers use Security Cloud Control API tokens when making Security Cloud Control REST API calls. The API token must be included in the REST API authorization header for a successful call. Although API tokens serve as "long-lived" access tokens and do not expire, they can be renewed or revoked.

To generate an API token in Security Cloud Control, you must first create an API Only User if one does not already exist. This user is specifically designated for API token generation and usage.

Once the API Only User is created, you can generate a new API token for that user. The token is visible only immediately after it is generated and remains visible as long as you stay on the **General Settings** page. If you navigate away and then return to the **General Settings** page, the token will no longer be displayed, although it is clear that a token has been issued.

Note API Only Users can generate API tokens; individual users cannot create API tokens for themselves or others.

API Token Format and Claims

The API token is a JSON Web Token (JWT). To learn more about the JWT token format, read the Introduction to JSON Web Tokens.

The Security Cloud Control API token provides the following set of claims:

- **id** - user/device uid
- **parentId** - tenant uid

- **ver** - the version of the public key (initial version is 0, for example, **cdo_jwt_sig_pub_key.0**)
- **subscriptions** - Security Services Exchange subscriptions (optional)
- **client_id** - "**api-client**"
- **jti** - token id

Token Management

Create API Only Users

When creating a user, a Super Admin can select "API Only User" to create a virtual user type and generate API token for authenticating to Security Cloud Control when making Security Cloud Control REST API calls. Security Cloud Control prompts you to provide a user name instead of an email address, which ensures that your permissions continue to function even after the original Super Admin departs your organization. The API Only User can't log into the Security Cloud Control interface.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the **Add a new user** ( ) icon to add a new user to your tenant.

Step 5 Select the **API Only User** checkbox.

Step 6 In the **Username** field, enter a name for the user and click **OK**.

Important
The username can't be an email address or contain the '@' character as the '@yourtenant' suffix will be automatically appended to the username.

Step 7 Select the user's role from the drop-down menu.

Step 8 Click **OK**.

Generate an API Token

To use the Security Cloud Control API, you must have an API token. We recommend creating an API-only user in your Security Cloud Control tenant and generating a token for it.

The token is a long-lived bearer token used in the authorization header of REST API calls. The same token is used for both Security Cloud Control API and the Cloud-Delivered Firewall Management Center API.

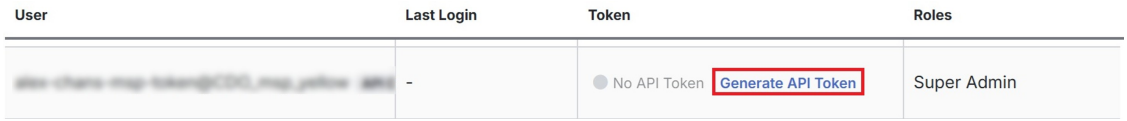
Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click **Generate API Token** under the **Token** column.



Step 5 Save the token in a secure location that aligns with your enterprise's best practices for handling sensitive data.

What to do next

For more information, see Getting Started with Security Cloud Control Firewall API Documentation.

Refresh an API Token

The API token does not expire. However, you may choose to refresh your API token, which renews the existing token, if the token is lost, compromised, or to conform to your enterprise's security guidelines.

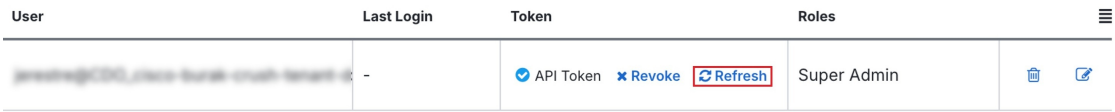
Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click **Refresh** under the **Token** column. Security Cloud Control generates a new API token.



Step 5 Save the new token in a secure location in accordance with your enterprise's best practices for maintaining sensitive data.

Note
The **Revoke**, **Refresh**, **Delete**, and **Edit** options for the API-only user for the Dynamic Attributes Connector service account (csdac-service@tenantname) have been disabled. This is to ensure users don't delete, edit, or revoke the API tokens for this API account, which is required for the Dynamic Attributes Connector functionality.

Revoke an API Token

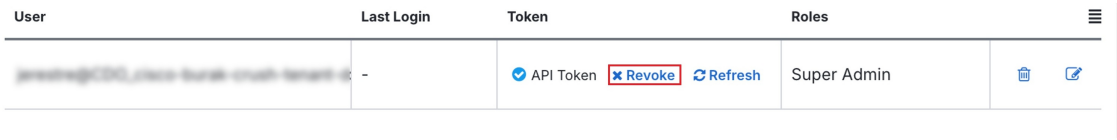
Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Under the **Token** column, click **Revoke** for the user you want to generate the API token.



Note
The **Revoke**, **Refresh**, **Delete**, and **Edit** options for the API-only user for the Dynamic Attributes Connector service account (csdac-service@tenantname) have been disabled. This is to ensure users don't delete, edit, or revoke the API tokens for this API account, which is required for the Dynamic Attributes Connector functionality.

Relationship Between the Identity Provider Accounts and Security Cloud Control User Records

To log in to Security Cloud Control, a customer needs an account with a SAML 2.0-compliant identity provider (IdP), a multi-factor authentication provider, and a user record in Security Cloud Control. The IdP account contains the user's credentials and the IdP authenticates the user based on those credentials. Multi-factor authentication provides an added layer of identity security. The Security Cloud Control user record primarily contains the username, the Security Cloud Control tenant with which they are associated, and the user's role. When a user logs in, Security Cloud Control tries to map the IdP's user ID to an existing user record on a tenant in Security Cloud Control. When Security Cloud Control finds a match, the user is logged in to that tenant.

Unless your enterprise has its own single sign-on identity provider, your identity provider is Cisco Security Cloud Sign On. Cisco Security Cloud Sign On uses Duo for mutli-factor authentication. Customers can integrate their own IdP with Security Cloud Control if they choose.

Login Workflow

This is a simplified description of how the IdP account interacts with the Security Cloud Control user record to log in a Security Cloud Control user:

Procedure

Step 1 The user requests access to Security Cloud Control by logging in to a SAML 2.0-compliant identity provider (IdP) such as Cisco Security Cloud Sign On (https://sign-on.security.cisco.com) for authentication.

Step 2 The IdP issues a SAML assertion that the user is authentic, and a portal displays the applications the user can access. One of the tiles represents Security Cloud Control.

Step 3 Security Cloud Control validates the SAML assertion, extracts the username and attempts to find a user record among its tenants that corresponding to that username.

- If the user has a user record on a single tenant on Security Cloud Control, Security Cloud Control grants the user access to the tenant and the user's role determines the actions they can take.

- If the user has a user record on more than one tenant, Security Cloud Control presents the authenticated user with a list of tenants they can choose from. The user picks a tenant and is allowed to access the tenant. The user's role on that specific tenant determines the actions they can take.
- If Security Cloud Control does not have a mapping for the authenticated user to a user record on a tenant, Security Cloud Control displays a landing page giving users the opportunity to learn more about Security Cloud Control or request a free trial.

Creating a user record in Security Cloud Control does not create an account in the IdP and creating an account in the IdP does not create a user record in Security Cloud Control.

Similarly, deleting an account on the IdP does not mean you have deleted the user record from Security Cloud Control; although, without the IdP account, there is no way to authenticate a user to Security Cloud Control. Deleting the Security Cloud Control user record does not mean you have deleted the IdP account; although, without the Security Cloud Control user record, there will be no way for an authenticated user to access a Security Cloud Control tenant.

Implications of this Architecture

Customers Who Use Cisco Security Cloud Sign On

For customers who use Security Cloud Control's Cisco Security Cloud Sign On identity provider, a Super Admin can create a user record in Security Cloud Control and a user can self-register themselves with Security Cloud Control. If the two usernames match, and the user is properly authenticated, the user can log in to Security Cloud Control.

Should the Super Admin ever need to prevent a user from accessing Security Cloud Control, they can simply delete the Security Cloud Control user's user record. The Cisco Security Cloud Sign On account will still exist and if the Super Admin ever wants to restore the user, they can by creating a new Security Cloud Control user record with the same username as the one used for Cisco Security Cloud Sign On.

Should a customer ever run into a problem with Security Cloud Control that requires a call to our Technical Assistance Center (TAC), the customer could create a user record for the TAC engineer so they could investigate the tenant and report back to the customer with information and suggestions.

Customers Who Have Their Own Identity Provider

For customers who have their own identity provider, they control both the identity provider accounts and the Security Cloud Control tenants. These customers can create and manage identity provider accounts and user records in Security Cloud Control.

Should they ever need to prevent a user from accessing Security Cloud Control, they can delete the IdP account, the Security Cloud Control user record, or both.

If they ever need help from Cisco TAC, they can create both the identity provider account and a Security Cloud Control user record, with a read-only role, for their TAC engineer. The TAC engineer would then be able to access the customer's Security Cloud Control tenant, investigate, and report back the customer with information and suggestions.

Cisco Managed Service Providers

If Cisco Managed Service Providers (MSPs) use Security Cloud Control's Cisco Security Cloud Sign On IdP, they can self-register for Cisco Security Cloud Sign On and their customers can create a user record for them

in Security Cloud Control so that the MSP can manage the customer's tenant. Of course, the customer has full control to delete the MSP's record when they choose to.

Related Topics

- General Settings
- User Management
- Security Cloud Control User Roles

The Cisco Success Network

Cisco Success Network is a user-enabled cloud service. When you enable Cisco Success Network, a secure connection is established between the device and the Cisco cloud to stream usage information and statistics. Streaming telemetry provides a mechanism to select data of interest from the device and to transmit it in a structured format to remote management stations for the following benefits:

- To inform you of available unused features that can improve the effectiveness of the product in your network.
- To inform you of additional technical support services and monitoring that might be available for your product.
- To help Cisco improve our products.

The device establishes and maintains the secure connection at all times, and allows you to enroll in the Cisco Success Network. After you have registered the device, you can change the Cisco Success Network setting.

Note

- For Firewall Threat Defense high availability pairs, the selection of the active device overrides the Cisco Success Network setting on the standby device.
- Security Cloud Control does not manage the Cisco Success Network settings. The settings managed through, and telemetry information is provided by, the Firewall Device Manager user interface.

Enable or Disable the Cisco Success Network

During initial system setup, you are prompted to register the device with Cisco Smart Software Manager. If you instead elected to use the 90-day evaluation license, you must register the device before the end of the evaluation period. To enroll the device, either register the device with Cisco Smart Software Manager (on the Smart Licensing page) or enroll with Security Cloud Control by entering a registration key.

When you register the device, your virtual account allocates the license to the device. Registering the device also registers any optional licenses that you have enabled.

You can turn off this connection at any time by disabling Cisco Success Network, although you can only disable this option through the Firewall Device Manager UI. Disabling will disconnect the device from the cloud. Disconnection does not impact the receipt of updates or the operation of the Smart Licensing capabilities, which continue to operate normally. See the **Connecting to the Cisco Success Network** section of the System Administration chapter of the Firepower Device Manager configuration Guide, Version 6.4.0 or later for more information.

Manage Users in Security Cloud Control

Before you create or edit a user record in Security Cloud Control, read Relationship Between Identity Provider Accounts and Security Cloud Control User Records to learn how the identity provider (IdP) account and the user record interact. Security Cloud Control users need a record and a corresponding IdP account so they can be authenticated and access the Security Cloud Control tenant.

Unless your enterprise has its own IdP, Cisco Secure Sign-On is the identity provider for all Security Cloud Control tenants. The rest of this article assumes you are using Cisco Secure Sign-On as your identity provider.

You can see all the user records associated with your tenant on the **User Management** screen. This includes any Cisco support engineer who is temporarily associated with your account to resolve a support ticket.

Manage Super Admins on Your Tenant

View the API User Records Associated with your Tenant

Procedure

Step 1 In the left pane, choose **Settings** > **User Management**.

Step 2 In the left pane, **Administration** > **API User Management**.

Active Directory Groups in User Management

For tenants that have a high turnover for large quantities of users, you can map Security Cloud Control to your Active Directory (AD) groups instead of adding individual users to Security Cloud Control for an easier way to manage your user lists and user roles. Any user changes, such as a new user addition or removing existing users, can now be done in Active Directory and no longer need to be done in Security Cloud Control.

You must have a **SuperAdmin** user role to add, edit, or delete an Active Directory group from the **User Management** page. See User Roles for more information.

In the left pane, choose **Settings** > **User Management**

Active Directory Groups

- In the left pane, choose **Settings** > **User Management** > **Active Directory Groups**. This page shows the Active Directory groups that are currently mapped to Security Cloud Control.
- In the left pane, click **Administration** > **API User Management > Active Directory Groups**.
- This page displays the role of the Active Directory group as assigned in your Active Directory manager.
- Users within an Active Directory group are not listed individually in either the **Active Directory Groups** tab or the **Users** tab.

Audit Logs

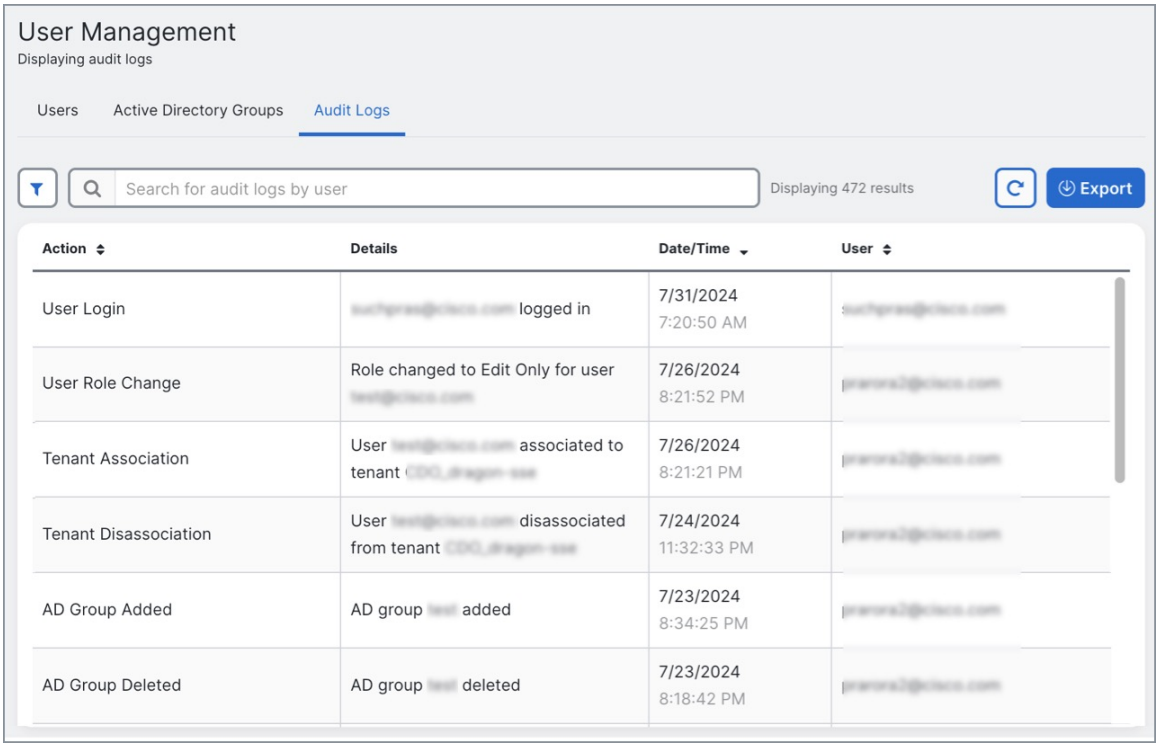
Audit Logs in Security Cloud Control record user-related and system-level actions. Key events that are captured by the **Audit Logs** include:

- **User Login:** Records every instance of user authentication.
- **Tenant Association and Disassociation:** Tracks user associations with, or disassociations from, tenants.
- **User Role Change:** Records any modifications to user roles.
- **Active Directory Groups:** Records any addition, deletion, and role changes within AD groups.

Procedure:

1. In the left pane, click **Settings** > **User Management**.
2. In the left pane, click **Administration** > **API User Management**.
3. Click the **Audit Logs** tab. A list of events and activities in the current tenant you are logged into is displayed.
4. Use the **Search** text box to find logs for a specific user.
5. Click the filter icon to refine your search results and view specific events. You can filter the logs based on the **Time Range** and **Event Action**.
6. Click **Export** to download the details in CSV format.

Figure 3: Audit Logs



Multi-role Users

As an extension along the IAM capabilities in Security Cloud Control, it is now possible for a user to have multiple roles.

A user can be part of multiple groups in Active Directory, and those groups can be defined in Security Cloud Control with different Security Cloud Control roles. The final permissions that a user gets on login are a combination of the roles of all the Active Directory groups that are defined in Security Cloud Control that the user is part of. For instance, if a user is part of two Active Directory groups and both the groups are added in Security Cloud Control with two different roles such as edit-only and deploy-only, the user would have both edit-only and deploy-only permissions. This applies to any number of groups and roles.

Active Directory group mappings must only be defined one time in Security Cloud Control, and managing access and permissions for users can after be achieved exclusively in Active Directory by adding, removing, or moving users between different groups.

Note If a user is both an individual user and part of an Active Directory group on the same tenant, the user role of the individual user overrides the user role of the Active Directory group.

API Endpoints for Active Directory Groups

If you are a super admin, you can use API endpoints to do the following:

- Create an Active Directory group
- Remove an Active Directory group
- Modify an Active Directory group
- Get Active Directory groups
- Get an Active Directory group

The aforementioned links point to the corresponding sections of the Cisco DevNet website.

Prerequisites for Adding an Active Directory Group to Security Cloud Control

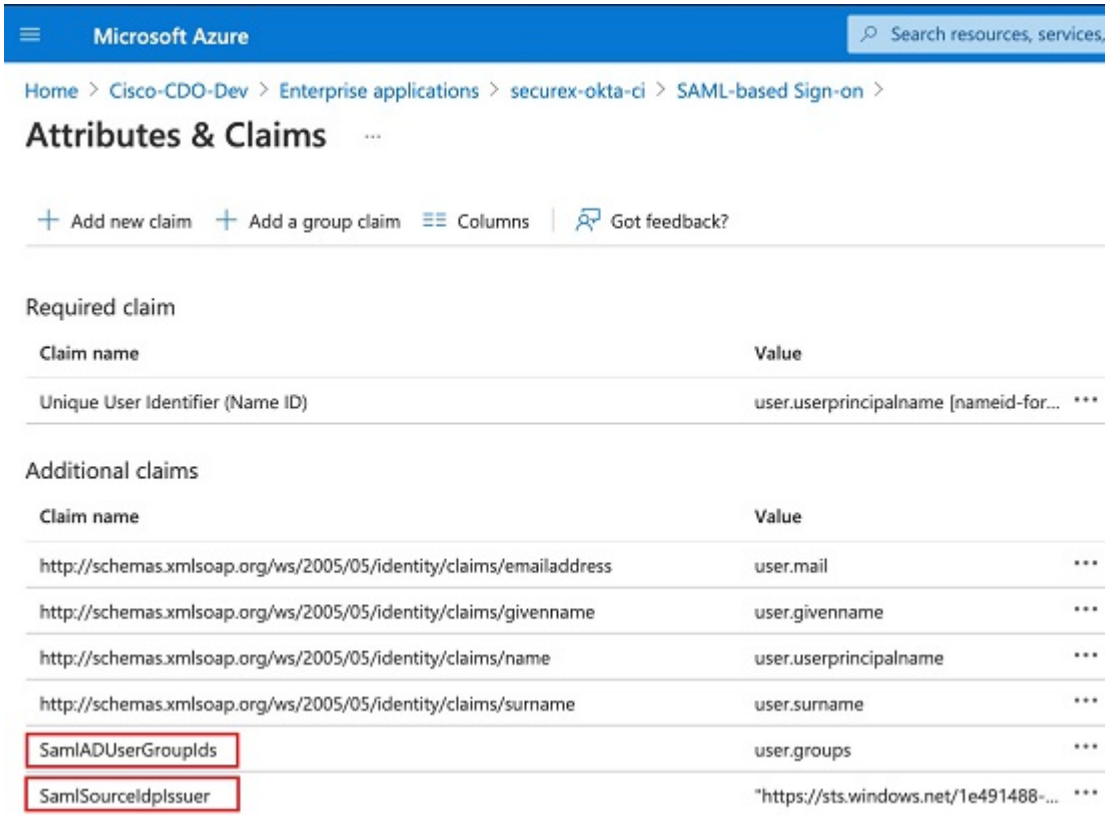
Before adding an Active Directory group mapping to Security Cloud Control as a form of user management, you must have your Active Directory that is integrated with Security Cloud Sign On. If your Active Directory Identity Provider (IdP) is not already integrated, see identity provider integration guide to integrate a custom Active Directory IdP integration with the following information:

- Your Security Cloud Control tenant name and region
- Domain to define custom routing for (for example: @cisco.com, @myenterprise.com)
- Certificate and federation metadata in the XML format

After your Active Directory integration is complete, add the following custom SAML claims in your Active Directory. The SAML claims and attributes are required, for you to be able to successfully sign-in to your Security Cloud Control tenant after your Active Directory integration is done. These values are case sensitive:

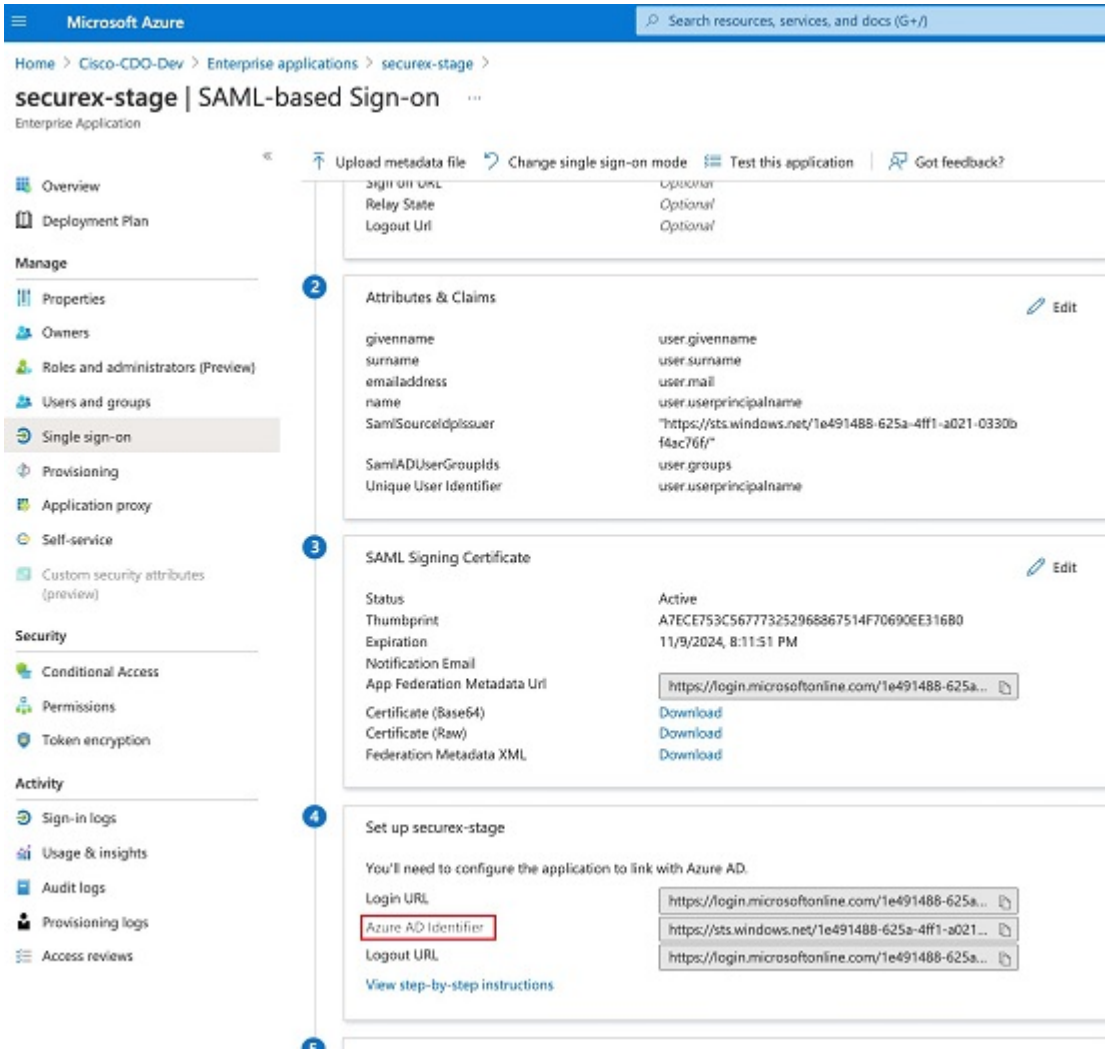
- **SamlADUserGroupIds -** This attribute describes all group associations that a user has on Active Directory. For example, in Azure select **+ Add a group claim** as seen in the screenshot below:

Figure 4: Custom Claims Defined in Active Directory



- **SamlSourceIdpIssuer** - This attribute uniquely identifies an Active Directory instance. For example, in Azure select **+ Add a group claim** and scroll to locate the Azure Active Directory Identifier as seen in the screenshot below:

Figure 5: Locate the Azure Active Directory Identifier



Add an Active Directory Group for User Management

You must have a **SuperAdmin** user role to add, edit, or delete an Active Directory group.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, choose **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the **Active Directory Groups** tab.

Step 5 Click the add Active Directory group (+) button.

Step 6 Provide the following information:

- **Group Name**: Enter a unique name. This name does not have to match the group name in your Active Directory. Security Cloud Control does not support special characters for this field.
- **Group Identifier**: Manually enter the Group Identifier from your Active Directory. The value of the group identifier should be the same as the group identifier in the custom claim definition. It could be any value that corresponds to the unique identity of the group, for example, my-favourite-group, 12345, and so forth.
- **AD Issuer**: Manually enter the Active Directory Issuer value from your Active Directory.
- **Role**: Select a user role. This determines the role for all the users included in this Active Directory group. See User Roles for more information.
- (Optional) **Notes**: Add any notes that are applicable to this Active Directory group.

Step 7 Select **OK**.

Edit an Active Directory Group for User Management

Before you begin

Note that editing an Active Directory Group's user management in Security Cloud Control only allows you to modify how Security Cloud Control limits the Active Directory group. You cannot edit the Active Directory group itself in Security Cloud Control. You must use Active Directory to edit the list of users within an Active Directory group.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, choose **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the **Active Directory Groups** tab.

Step 5 Identify the Active Directory Group you want to edit and click the edit icon.

Step 6 Modify the following values:

- **Group Name**: Enter a unique name. Security Cloud Control does not support special characters for this field.
- **Group Identifier**: Manually enter the Group Identifier from your Active Directory. The value of the group identifier should be the same as the group identifier in the custom claim definition. It could be any value that corresponds to the unique identity of the group, for example, my-favourite-group, 12345 and so forth.
- **AD Issuer**: Manually enter the Active Directory Issuer value from your Active Directory.
- **Role**: This determines the role for all the users included in this Active Directory group. See User Roles for more information.

- **Notes**: Add any notes that are applicable to this Active Directory group.

Step 7 Click **OK**.

Delete an Active Directory Group for User Management

Procedure

Step 1 Log in to Security Cloud Control.
Step 2 In the left pane, choose **Settings** > **User Management**.
Step 3 In the left pane, click **Administration** > **API User Management**.
Step 4 Click the **Active Directory Groups** tab.
Step 5 Identify the Active Directory Group you want to delete.
Step 6 Click the delete icon.
Step 7 Click **OK** to confirm you want to delete the Active Directory group.

Create a New Security Cloud Control User

These two tasks are necessary for creating a new Security Cloud Control user. They do not have to be done in sequence:

- Create a Cisco Secure Sign-on Account for the New User
- Create a Security Cloud Control User Record with Your Security Cloud Control Username

After these tasks are done, then the user can open Security Cloud Control from the Cisco Secure Sign-On dashboard.

Create a Cisco Security Cloud Sign On Account for the New User

Creating a Cisco Security Cloud Sign On account can be done by the new user at any time, without needing to know the name of the assigned tenant.

About Logging in to Security Cloud Control

Security Cloud Control uses Cisco Secure Sign-On as its identity provider and Duo for multi-factor authentication (MFA). **To log into Security Cloud Control, you must first create your account in Cisco Security Cloud Sign On and configure MFA using Duo**.

Security Cloud Control requires MFA which provides an added layer of security in protecting your user identity. Two-factor authentication, a type of MFA, requires two components, or factors, to ensure the identity of the user logging into Security Cloud Control. The first factor is a username and password, and the second is a one-time password (OTP), which is generated on demand.

Important **If your Security Cloud Control tenant existed before October 14, 2019**, use Migrate to Cisco Security Cloud Sign On Identity Provider, on page 9 for log in instructions instead of this article.

Before You Log In

Install DUO Security

We recommend installing the Duo Security app in a mobile phone. Review Duo Guide to Two Factor Authentication: Enrollment Guide if you have questions about installing Duo.

Time Synchronization

You are going to use your mobile device to generate a one-time password. It is important that your device clock is synchronized with real time as the OTP is time-based. Make sure your device clock set automatically or manually set it to the correct time.

Create a New Cisco Security Cloud Sign On Account and Configure Duo Multi-factor Authentication

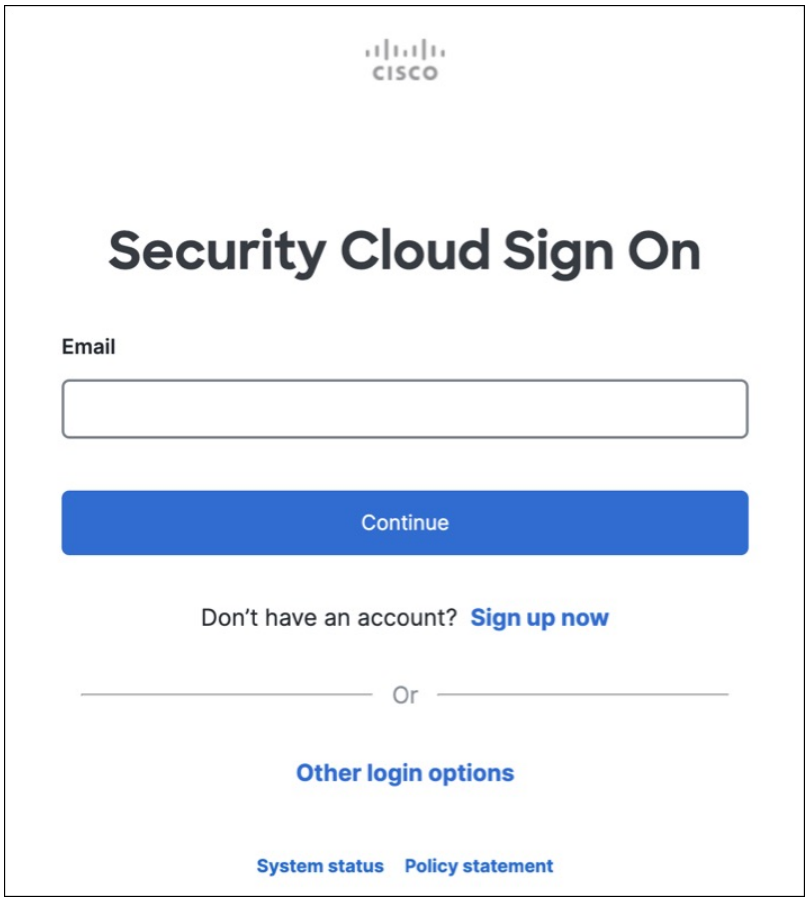
The initial sign-on workflow is a four-step process. You need to complete all four steps.

Procedure

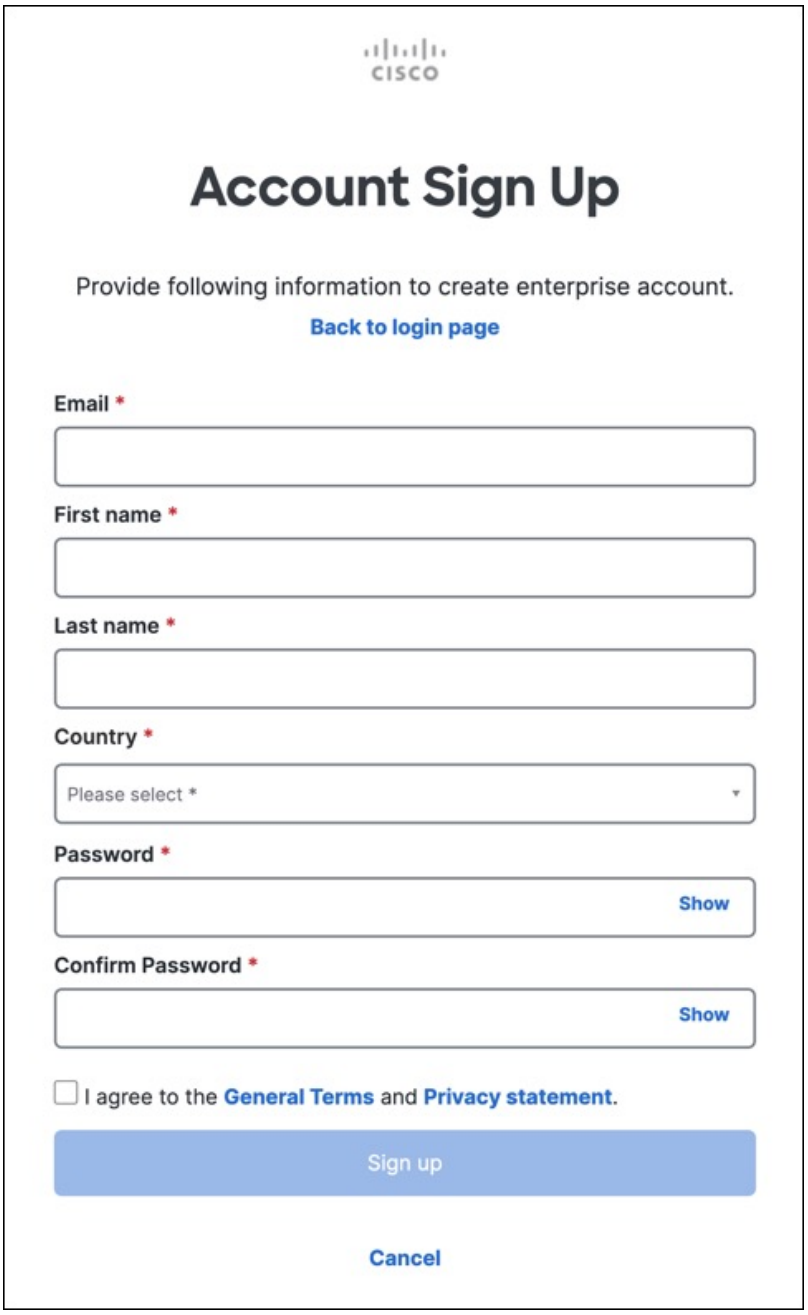
Step 1 **Sign Up for a New Cisco Security Cloud Sign On Account**.

a. Open https://sign-on.security.cisco.com.

b. At the bottom of the sign in screen, click **Sign up now**.



c. Provide the following information to create enterprise account.



Here are some tips:

- **Email**: Enter the email address that you will eventually use to log in to Security Cloud Control.
- **Password**: Enter a strong password.

d. Click **Sign up**.

Cisco sends you a verification email to the address you registered with. Open the email and click **Activate account**.

Step 2 **Set up Multi-factor Authentication Using Duo**

We recommend using a mobile device when setting up multi-factor authentication.

a. In the **Set up multi-factor authentication** screen, click **Configure factor**.

b. Click **Start setup** and follow the prompts to choose a mobile device and verify the pairing of that mobile device with your account.

For more information, see Duo Guide to Two Factor Authentication: Enrollment Guide. If you already have the Duo app on your device, you'll receive an activation code for this account. Duo supports multiple accounts on one device.

c. At the end of the wizard click **Continue to Login**.

d. Log in to Cisco Security Cloud Sign On with the two-factor authentication.

Step 3 **(Optional) Setup Google Authenticator as an additional authenticator**

a. Choose the mobile device you are pairing with Google Authenticator and click **Next**.

b. Follow the prompts in the setup wizard to setup Google Authenticator.

Step 4 **Configure Account Recovery Options for your Cisco Security Cloud Sign On**

a. Choose a recovery phone number for resetting your account using SMS.

b. Choose a security image.

c. Click **Create My Account**.

Create a User Record with Your Security Cloud Control Username

Only a Security Cloud Control user with **Super Admin** privileges can create the Security Cloud Control user record. The **Super Admin** must create the user record with the same email address that was specified in the **Create Your Security Cloud Control Username** task above.

Use the following procedure to create a user record with an appropriate user role:

Procedure

Step 1 Login to Security Cloud Control.

Step 2 In the left pane, choose **Settings** > **User Management**.

Step 3 Click  to add a new user to your tenant.

Step 4 Provide the email address of the user.

Note
The user's email address must correspond to the email address of the Cisco Secure Log-On account.

Step 5 From the **Role** drop-down list, select the user's role.

Step 6 Click **OK**.

The New User Opens Security Cloud Control from the Cisco Secure Sign-On Dashboard

Procedure

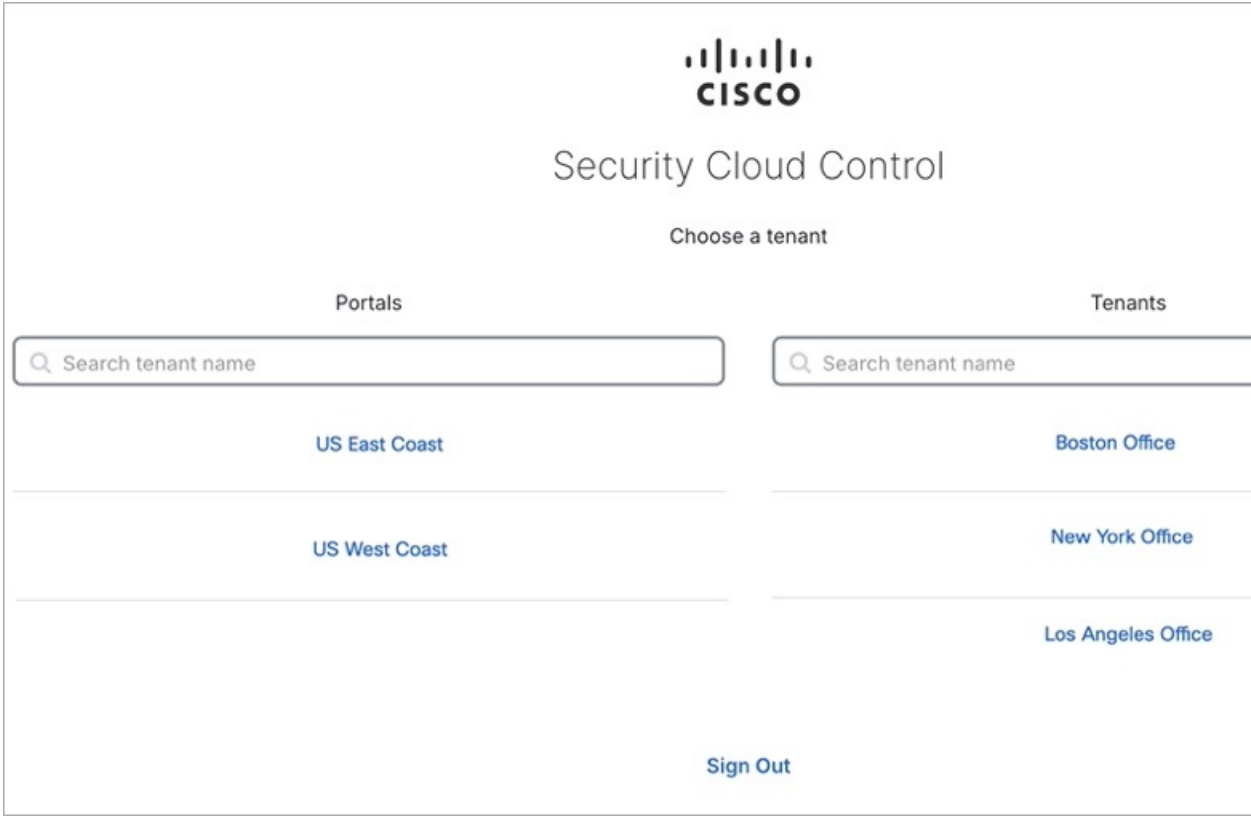
Step 1 Click the appropriate **Security Cloud Control** tile on the Cisco Secure Sign-on dashboard for your tenant's region.

Step 2 Click the authenticator logo to choose Duo Security or Google Authenticator if you have set up both authenticators.

- If you already have a user record on an existing tenant, you are logged into that tenant.
- If you already have a user record on several portals, you will be able to choose which portal to connect to.
- If you already have a user record on several tenants, you will be able to choose which Security Cloud Control tenant to connect to.
- If you do not already have a user record on an existing tenant, you will be able to learn more about Security Cloud Control or request a trial tenant.

The **Portals** view retrieves and displays consolidated information from multiple tenants.

The **Tenant** view shows several tenants on which you have a user record.



Understand user roles in Security Cloud Control Firewall Management

Security Cloud Control Firewall Management assigns roles per user and per organization. If a user has access to more than one tenant, that user can have the same user ID but different roles on different organizations. For example, a user can have the `Read-Only` role on one organization and the `Super Admin` role on another.

When the interface or documentation refers to a `Read-Only` user, `Admin` user, or `Super Admin` user, it describes that user's permission level on a specific organization.

Read-only role

A user assigned the Read-Only role sees this blue banner on every page:

Read Only User. You cannot make configuration changes.

Users with the `Read-Only` role can:

- View any page or any setting in Security Cloud Control.

- View all device configuration details including sensitive values in device configurations, such as certificates, PSKs, and credentials.

Note Note: For ASA devices, we recommend enabling password encryption as a best practice. Password encryption helps prevent PSKs and credentials from being visible in clear text in the configuration.

- Compare device configurations, view the change log, and see VPN mappings.
- Search and filter the contents of any page.
- View every warning regarding any setting or object on any page.
- Generate, refresh, and revoke their own API tokens. Note that if a read-only user revokes their own token, they cannot recreate it.
- Contact support through our interface and can export a change log.

Users with the `Read-Only` role cannot:

- Create, update, configure, or delete anything on any page.
- Onboard devices.
- Step-through the tasks needed to create something like an object or a policy, but not be able to save it.
- Create Security Cloud Control user records.
- Change user role.
- Attach or detach access rules to a policy.

Edit-Only role

Users with the Edit-Only role can:

- Edit and save device configurations, including but not limited to objects, policies, rulesets, interfaces, VPN, etc.
- Allow configuration changes that are made through the **Read Configuration** action.
- Utilize the Change Request Management action.

Users with the Edit-Only role cannot:

- Deploy changes to a device or to multiple devices.
- Discard staged changes or changes that are detected through OOB.
- Upload AnyConnect Packages, or configure these settings.
- Schedule or manually start image upgrades for devices.
- Schedule or manually start a security database upgrade.

- Manually switch between Snort 2 and Snort 3 versions.
- Create a template.
- Change the existing OOB Change settings.
- Edit System Management settings.
- Onboard devices.
- Delete devices.
- Delete VPN sessions or user sessions.
- Create Security Cloud Control user records.
- Change user role.

Deploy-Only role

Users with the Deploy-Only role can:

- Deploy staged changes to a device, or to multiple devices.
- Revert or restore configuration changes for ASA devices.
- Schedule or manually start image upgrades for devices.
- Schedule or manually start a security database upgrade.
- Utilize the Change Request Management action.

Users with the `Deploy-Only` role cannot:

- Manually switch between Snort 2 and Snort 3 versions.
- Create a template.
- Change the existing OOB Change settings.
- Edit System Management settings.
- Onboard devices.
- Delete devices.
- Delete VPN sessions or user sessions.
- Create, update, configure, or delete anything on any page.
- Onboard devices.
- Step-through the tasks needed to create something like an object or a policy, but not be able to save it.
- Create Security Cloud Control user records.
- Change user role.
- Attach or detach access rules to a policy.

VPN Sessions Manager role

The `VPN Sessions Manager` role is intended for administrators who monitor remote access VPN connections, not site-to-site VPN connections.

Users with the VPN Sessions Manager role can:

- View any page or any setting in Security Cloud Control.
- Search and filter the contents of any page.
- Compare device configurations, view the change log, and see RA VPN mappings.
- View every warning regarding any setting or object on any page.
- Generate, refresh, and revoke their own API tokens. Note that if a VPN Sessions Manager user revokes their own token, they cannot recreate it.
- Contact support through our interface and export a change log.
- Terminate existing RA VPN sessions.

Users with the VPN Sessions Manager role cannot:

- Create, update, configure, or delete anything on any page.
- Onboard devices.
- Step-through the tasks needed to create something like an object or a policy, but not be able to save it.
- Create Security Cloud Control user records.
- Change user role.
- Attach or detach access rules to a policy.

Admin role

Users with the `Admin` role have complete access to most areas of Security Cloud Control Firewall Management.

- Create, read, update, and delete any object or policy in Security Cloud Control Firewall Management and configure any setting.
- Onboard devices.
- View any page or any setting in Security Cloud Control.
- Search and filter the contents of any page.
- Compare device configurations, view the change log, and see VPN mappings.
- View every warning regarding any setting or object on any page.
- Generate, refresh, and revoke their own API tokens. If their token is revoked, they can contact support through our interface and can export a change log.

Admin users **cannot** do the following:

- Create Security Cloud Control user records.
- Change user role.

Super Admin role

Users with the Super Admin role have complete access to all areas of Security Cloud Control Firewall Management.

Users with the Super Admin role can:

- Change user roles.
- Create user records.
- Create, read, update, and delete any object or policy in Security Cloud Control Firewall Management and configure any setting.
- Onboard devices.
- View any page or any setting in Security Cloud Control Firewall Management.
- Search and filter the contents of any page.
- Compare device configurations, view the change log, and see VPN mappings.
- View every warning regarding any setting or object on any page.
- Generate, refresh, and revoke their own API tokens. If their token is revoked, they can
- Contact support through our interface and can export a change log.

Change The Record of the User Role

The user record is the currently recorded role of a user. By looking at the users associated with your tenant, you can determine what role each use has by their record. By changing a user role, you change the user record. User's roles are identified by their role in the User Management table. See User Management for more information.

You must be a Super Admin to change the user record. If your tenant has no Super Admins, contact Security Cloud Control support.

Add a User Account to Security Cloud Control

Security Cloud Control users need a Security Cloud Control record and a corresponding IdP account so they can be authenticated and access your Security Cloud Control tenant. This procedure creates the user's Security Cloud Control user record, not the user's account in Cisco Security Cloud Sign On. If the user does not have an account in Cisco Security Cloud Sign On, they can self-enroll by navigating to https://sign-on.security.cisco.com and clicking **Sign up** at the bottom of the Sign in screen.

Note You will need to have the role of Super Admin on Security Cloud Control to perform this task.

Create a User Record

Use the following procedure to create a user record with an appropriate user role:

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the blue plus button ( ) to add a new user to your tenant.

Step 5 Provide the email address of the user.

Note
The user's email address must correspond to the email address of the Cisco Secure Log-On account.

Step 6 Select the user's role from the drop-down menu.

Step 7 Click **Save**.

Note
Though Super Admins can create a Security Cloud Control user record, that user record is not all that is needed for a user to log in to your tenant. The user also needs an account with the identity provider used by your tenant. Unless your enterprise has its own single sign-on identity provider, your identity provider is Cisco Secure Sign-on. Users can self-register for their Cisco Secure Sign-On account; see Initial Login to Your New Security Cloud Control Tenant, on page 8 for more information.

Edit a User Record for a User Role

You will need to have the role of Super Admin to perform this task. If the Super Admin changes the role of a Security Cloud Control user that is logged in, once their role has been changed, the user is automatically logged out of their session. Once the user logs back in, they assume their new role.

Note You will need to have the role of Super Admin on Security Cloud Control to perform this task.

Caution Changing the role of a user record will delete an API token associated with the user record if there is one. The user must generate a new API token once the user role changes.

Edit a User Role

Note If a Security Cloud Control user is logged in, and a Super Admin changes their role, the user must log out and log back in again for the change to take effect.

To edit the role defined in the user record, follow this procedure:

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the edit icon in the user's row.

Step 5 Select the user's new role from the Role drop-down menu.

Step 6 If the user record shows that there is an API token associated with the user, you will need to confirm that you want to change the user's role and delete the API token as a result.

Step 7 Click **v**.

Step 8 If Security Cloud Control deleted the API token, contact the user so that they may create a new API Token.

Note
The **Revoke**, **Refresh**, **Delete**, and **Edit** options for the API-only user for the Dynamic Attributes Connector service account (csdac-service@tenantname) have been disabled. This is to ensure customers don't delete, edit, or revoke the API tokens for this API account, which is required for the Dynamic Attributes Connector functionality.

Delete a User Record for a User Role

Deleting a user record in Security Cloud Control prevents the associated user from logging in to Security Cloud Control by breaking the mapping of the user record with the Cisco Security Cloud Sign On account. When you delete a user record, you are also deleting the API token associated with that user record should there be one. Deleting a user record in Security Cloud Control does not delete the user's IdP account in Cisco Security Cloud Sign On.

Note You will need to have the role of Super Admin on Security Cloud Control to perform this task.

Delete a User Record

To delete the role defined in the user record, see the following procedure:

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the Security Cloud Control navigation bar, click **Settings** > **User Management**.

Step 3 In the left pane, click **Administration** > **API User Management**.

Step 4 Click the trash can icon in the row of the user you want to delete.

Step 5 Click **OK**.

Step 6 Confirm that you want to remove the account from the tenant by clicking OK.

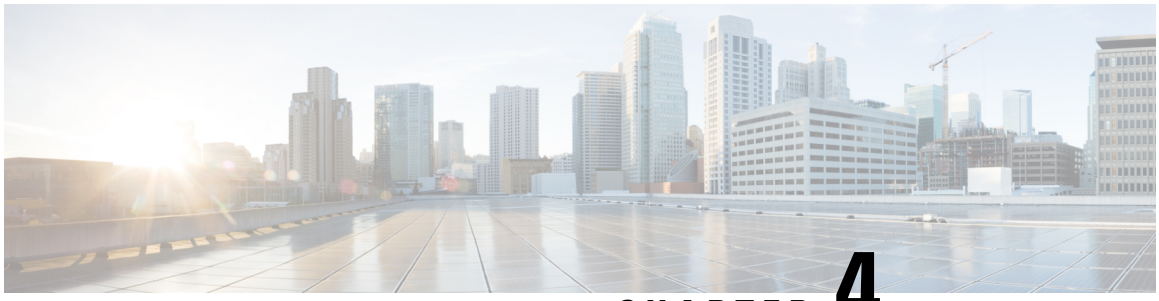
Note
The **Revoke**, **Refresh**, **Delete**, and **Edit** options for the API-only user for the Dynamic Attributes Connector service account (csdac-service@tenantname) have been disabled. This is to ensure customers don't delete, edit, or revoke the API tokens for this API account, which is required for the Dynamic Attributes Connector functionality.



PART II

Manage security devices

- Onboard devices in Security Cloud Control Firewall Management, on page 163
- Onboard a Firewall Threat Defense Device, on page 199
- Onboard Secure Firewall ASA, on page 215
- Onboard an On-Premises Firewall Management Center, on page 223



CHAPTER 4

Onboard devices in Security Cloud Control Firewall Management

You can onboard both live devices and model devices to Security Cloud Control Firewall Management. Model devices are uploaded configuration files that you can view and edit using Security Cloud Control Firewall Management.

Most live devices and services require an open HTTPS connection so that the Secure Device Connector can connect Security Cloud Control Firewall Management to the device or service.

This chapter covers the following sections:

- Introduction to Secure Connectors, on page 163
- Onboard devices in Security Cloud Control Firewall Management, on page 196
- Supported devices, software, and hardware for Security Cloud Control Firewall Management, on page 196

Introduction to Secure Connectors

A secure connector is a connector instance that runs in your network or supported cloud environment and provides a secure communication path between Security Cloud Control Firewall Management and managed resources. Secure connectors help Security Cloud Control Firewall Management manage devices that are not directly reachable from the internet and support event forwarding for logging and analytics workflows.

Use the **Secure Connectors** page to view, deploy, and manage connector instances for your tenant.

Secure connector types

The **Secure Connectors** page can include these connector types.

- Secure Device Connector (SDC): Provides a secure communication path between Security Cloud Control Firewall Management and supported managed devices.
- Secure Event Connectors (SEC): Receives events from supported devices and forwards the events to the Cisco cloud for logging and analytics.

About Secure Device Connector

A Secure Device Connector (SDC) is an intelligent proxy that lets Cisco devices communicate with Security Cloud Control Firewall Management when the devices are not directly reachable from the internet. When you onboard a device by using device credentials, you can deploy an SDC in your network to proxy communication between the device and Security Cloud Control Firewall Management.If the device is directly reachable from the internet, you can allow direct communication through the device's outside interface instead of using an SDC. The SDC performs these functions:

- Monitors Security Cloud Control Firewall Management for commands and messages for your managed devices.
- Executes commands on behalf of Security Cloud Control Firewall Management.
- Relays messages to your managed devices.
- Returns device responses.

Communication between the SDC and Security Cloud Control Firewall Management uses HTTPS with TLS 1.3 and AES-128-GCM. Credentials for onboarded devices and services are encrypted from the browser to the SDC and are encrypted at rest by using AES-128-GCM. Only the SDC has access to those credentials.

A user with the Super Administrator role is required to create a Secure Device Connector or a Secure Event Connector (SEC).

You can onboard these devices to Secure Device Connector through an SDC:

- Secure Firewall ASA
- FDM-Managed
- On-Premises Firewall Management Center using credentials method
- Meraki MX devices
- Generic SSH devices
- Cisco IOS devices

Secure Firewall Threat Defense devices that are managed by Cloud-Delivered Firewall Management Center do not require an SDC and do not support onboarding through proxies. Ensure that these devices have proper DNS settings and outbound internet connectivity so they can connect to Cloud-Delivered Firewall Management Center.

Plan device connectivity

Security Cloud Control Firewall Management connects to managed devices either through the cloud connector or through an SDC.

Table 18:

Connection method	Use when	Required network access
Direct cloud connector	The device is directly reachable from the internet.	Allow inbound access from the Security Cloud Control Firewall Management IP addresses for your cloud region on port 443, or on the port that you use for device management.
SDC	The device is not directly reachable from the internet, or the source explicitly requires an on-premises SDC.	Allow full inbound access from the SDC host on port 443, or on the port that you use for device management. Ensure that the SDC VM can reach the device management interface.

An FDM-managed device can be onboarded to Security Cloud Control Firewall Management by using device credentials, a registration key, or its serial number whether it is directly accessible from the internet. If the device does not have direct internet access, but it resides on a network that does, the Security Services Exchange connector that is delivered as part of the device can reach the Security Services Exchange cloud and allow the FDM-managed device to be onboarded.

The source explicitly states that you need an on-premises SDC to onboard the following:

- An ASA device that is not accessible from the cloud
- An FDM-managed device that is not accessible from the cloud when you use the credentials onboarding method
- A Cisco IOS device
- A device with SSH access
- An On-Premises Firewall Management Center using its credentials for Government customers.

All other devices and services do not require an on-premises SDC because Security Cloud Control Firewall Management connects by using its cloud connector.

Docker network considerations for the SDC

SDC runs as a Docker container. Docker commonly uses the `172.17.0.0/16` subnet for the default bridge network, docker0.

If `172.17.0.0/16`, or any part of the Docker-assigned network space, overlaps with your existing network IP space, change the Docker network defaults before deploying the SDC. To use alternate networks, edit /etc/docker/daemon.json configuration.

For example, Use the supernet `10.198.0.1/24` for Docker networking address pools and use IP address `10.198.128.0/17` as the default docker bridge interface, docker0, from the subnet `10.198.0.0/24`.

```
sudo vi /etc/docker/daemon.json

{
  "log-driver": "json-file",
  "log-opts": {
```

```
    "max-size": "100m",
    "max-file": "5"
  },
    "bip": "10.198.0.1/24",
    "default-address-pools": [
        {
            "base": "10.198.128.0/17",
            "size": 24
        }
    ]
}

(save and exit)

sudo reboot (required)
```

For more information, see Networking overview.

Allow inbound access for direct cloud connectivity

Security Cloud Control connects to the devices that it manages through the cloud connector or through an (SDC).

When you connect Security Cloud Control Firewall Management directly to a device through the cloud connector, allow inbound access on port 443, or on the port that you have configured for device management, from the IP addresses for your region.

Table 19:

Region	URL	Allow inbound access from
Asia-Pacific-Japan (APJ)	https://security.cisco.com	54.199.195.111, 52.199.243.0
Australia (AUS)	https://security.cisco.com	13.55.73.159, 13.238.226.118
Europe, Middle East, and Africa (EMEA)	https://security.cisco.com	35.157.12.126, 35.157.12.15
India (IN)	https://security.cisco.com	35.154.115.175 13.201.213.99
United States (US)	https://security.cisco.com	52.34.234.2 52.36.70.147

Special Consideration for Connecting an ASA to an SDC

Specifically, for ASA the SDC uses the same secure communications channel used by ASDM.

If the ASA under management is also configured to accept AnyConnect VPN Client connections, the ASDM HTTP server port must be changed to a value of 1024 or higher. Note that this port number will be the same port number used when onboarding the ASA device into Security Cloud Control.

Example ASA Commands

The following examples assume that the ASA outside interface is named 'outside' and an AnyConnect client is configured on the ASA so the ASDM HTTP server is listening on port 8443.

To enable the outside interface, enter these commands:

Asia-Pacific-Japan Region:

- http 54.199.195.111 255.255.255.255 outside
- http 52.199.243.0 255.255.255.255 outside

Australia Region

- http 13.55.73.159 255.255.255.255 outside
- http 13.238.226.118 255.255.255.255 outside

EMEA Region

- http 35.157.12.126 255.255.255.255 outside
- http 35.157.12.15 255.255.255.255 outside

India Region

- http 35.154.115.175 255.255.255.255 outside
- http 13.201.213.99 255.255.255.255 outside

United States Region

- http 52.34.234.2 255.255.255.255 outside
- http 52.36.70.147 255.255.255.255 outside

To enable the ASDM HTTP server port, in the case where AnyConnect VPN Client is in use, enter this command:

http server enable 8443

Plan SDC capacity and host requirements

Each Security Cloud Control Firewall Management organization can have an unlimited number of SDCs. An SDC belongs to one organization only and is not shared across organizations.For deployment planning, one SDC is expected to support approximately 500 devices. Actual capacity depends on the features enabled on those devices and the size of their configuration files.

Deploying more than one SDC lets you:

- Scale device management without performance degradation.
- Place SDCs in isolated network segments while keeping the devices in the same Security Cloud Control Firewall Management organization.
- Run multiple SDCs on one host by following the bootstrap procedure for each additional SDC.

The first SDC name includes the tenant name and the number 1. Each additional SDC is numbered in sequence.

Deploy a VM for Running the Secure Device Connector and Secure Event Connector

When using device credentials to connect Security Cloud Control to a device, it is a best practice to download and deploy an SDC in your network to manage the communication between Security Cloud Control and the device. Typically, these devices are nonperimeter based and do not have a public IP address, or have an open port to the outside interface.

The SDC monitors Security Cloud Control for commands that need to be executed on your managed devices, and messages that need to be sent to your managed devices. The SDC executes the commands on behalf of Security Cloud Control, sends messages to Security Cloud Control on behalf of the managed devices, and returns replies from the managed devices to Security Cloud Control.

The number of devices a single SDC can manage depends on the features that are implemented on those devices and the size of their configuration files. To plan your deployment, however, we expect one SDC to support approximately 500 devices. For more information, see Using Multiple SDCs on a Single Security Cloud Control Tenant.

This procedure describes how to install an SDC in your network, using Security Cloud Control's VM image. This is the recommended and most reliable way to create an SDC.

Before you begin

- Security Cloud Control requires strict certificate checking and does not support Web or Content Proxy inspection between the Secure Device Connector (SDC) and the internet. If using a proxy server, disable inspection for traffic between the SDC and Security Cloud Control.
- The SDC must have full outbound access to the internet on TCP port 443, or the port you have configured for device management.
- The devices that are managed by Security Cloud Control must allow inbound traffic from the SDC VM's IP address.
- Review Connect Allow inbound access for direct cloud connectivity , on page 166 to the Secure Device Connector to ensure proper network access.
- If you are using a proxy on your network, ensure that you have all the required details before running the host setup command. Most of the issues are related to incorrect proxy configurations. Important details are:
  - The IP/hostname of your proxy.
  - Whether or not your proxy intercepts traffic and reencrypts it using its own cert. This detail is the cause of most of the complications with the SDC VM setup.
    - If your proxy does intercept traffic, have the root certificate ready when configuring the VM. You can paste it in when prompted so that the host and the SDC know to trust the certificates generated by your proxy.
    - If your proxy does not intercept traffic, then nothing else is required here.
  - The following items are most likely the same for proxied HTTP and HTTPS connections. However, if you use a different proxy for each protocol, you would need all of the following for each:
    - The IP address of your proxy
    - The port your proxy uses

- Whether your proxy requires that the connection to the proxy itself be over HTTPS (typically not the case). For example, if the address of your proxy is listed as https://proxy.corp.com:80 then you would answer yes. If the listed address is http://proxy.corp.com:80 then you would answer no. Note that both URLs use port 80, but the protocol is different.
- The authentication details of your proxy including:
  - Whether your proxy requires auth (most do not)
  - If yes, then you'll need the username and password available when you configure the host.

Supported Installations

- Security Cloud Control supports installing its SDC VM OVF image using the vSphere web client or the ESXi web client.
- Security Cloud Control does not support installing the SDC VM OVF image using the vSphere desktop client.
- Security Cloud Control supports installing the SDC on your own Ubuntu instance. Versions 20LTS - 24LTS are currently supported.
- ESXi 5.1 hypervisor.

System Requirements

- System requirements for a VM with one SDC:
  - 2 vCPUs
  - 2 GB of memory
  - 64 GB of disk space
- Each SDC you add to your host requires an additional 1 vCPU and 1 GB of RAM.
- System requirements for a VM with one SEC (a component that is used in Cisco Security Analytics and Logging):
  - 4 vCPUs minimum
  - 8 GB of memory
- Each SEC you add to the host requires doubling its resources, therefore, these are the requirements for a VMware ESXi host with one SDC and one SEC:
  - 6 vCPUs
  - 10 GB memory
  - 64 GB of disk space

Prepare for Installation

- To configure networking manually on the host, gather the following information:
  - The static IP address that you want to use for your VM
  - The passwords to use for the `cdo`user (or whichever user has sudo access) and the sdc user (the user under which Docker runs)
  - The IP address of the DNS server your organization uses
  - The gateway IP address of the network the SDC address is on
  - The FQDN or IP address of your time/NTP server
- The SDC virtual machine is configured to install security patches regularly and to do this, opening port 80 outbound is required.

  If your network is using allow/deny lists for outbound connections, you need to allow connections to ubuntu.com so those security updates can be applied.



Note Ubuntu secures its updates with checksums and only uses HTTP, not HTTPS. To pull security updates, you must allow HTTP connections to ubuntu.com.

Deploy the VM

There are two options for deploying the VM used to run the SDC and SEC.

1. Follow the steps below to download the VMware image provided by Security Cloud Control.
2. To deploy Ubuntu 20, 22, or 24 yourself. If deploying your own Ubuntu instance, you may skip the following section and proceed to the Configure the VM section.

Procedure

1. In the left pane, click **Administration** > **Integrations** > **Secure Connectors**.
2. Select the **Secure Connectors** tab on the **Services** page, click the blue plus button, and select **Secure Device Connector**.
3. Click **Download the SDC VM** image. This opens in a new tab.
4. Extract all the files from the .zip file. They look similar to these:
   - CDO-SDC-VM-ddd50fa.ovf
   - CDO-SDC-VM-ddd50fa.mf
   - CDO-SDC-VM-ddd50fa-disk1.vmdk
5. Log in to your VMware server as an administrator using the vSphere Web Client.



Note Do not use the ESXi Web Client.

Deploy the Secure Device Connector virtual machine from the OVF template by following the prompts.

6. When the setup is complete, power on the SDC VM.
7. Open the console for your new SDC VM.
8. Log in with the `cdo` username. The default password is `adm123`.

Configure the VM

Now you are able to bring up the console for the VM image you deployed (or SSH into it if you rolled your own and enabled SSH), you should run the configuration script to get your host ready to run the SDC or SEC Docker container(s).

1. If you downloaded the Security Cloud Control-provided VM, the CLI is already installed, and you can proceed to step 2. If you have deployed your own VM, SSH into it and run the command to install the CLI:

   ```
   curl -O
   https://s3.us-west-2.amazonaws.com/download.defenseorchestrator.com/sdc-cli/sdc-cli-package-latest.tgz
    && tar -xvf sdc-cli-package-latest.tgz && chmod +x ./install.sh && ./install.sh
   ```

2. Start the host configuration by running the command:

   ```
   sudo sdc host configure
   ```

3. When prompted for the password, enter adm123 for the Security Cloud Control-provided VM or whatever admin password you chose for your own VM.
4. Follow the prompts to configure the `sdc` user.
5. When prompted for the networking configuration, choose one of the following:
   - Manually configure this host with a static IP: If you want to specify the IP, gateway, DNS server, and so on, for this host and write it to the system config on the VM.
   - DHCP: If you have a DHCP server assigning static IPs to your VMs.
   - Static IP is already configured and I don't want to change my networking now.
6. When prompted, answer the questions about your proxy configuration. Review the detailed list at the top of this topic for all the prerequisites and potential proxy configuration options.
7. If you have configured a proxy, you will be prompted to reboot the VM for all the proxy settings to take effect. If you did not, you will not be prompted to reboot and you can move on to step 8.
8. Set a custom internet access test URL. You only need to do this if you deny all outbound connections by default. If you do, then specify a publicly accessible web url such at https://google.com that is on your allow list.
9. Install the latest security patches, some requires os tools and Docker server.
10. When prompted, indicate whether you want to have the script harden your SSH configuration.

If using our VM, proceed. If you are using your own VM and configuring SSH yourself, you may want to skip this step to avoid changing your current configuration.

11. When prompted to enable automatic updates for the SDC or SEC and the CLI itself, it is recommended that you do this to stay up to date with bug fixes, patches, and new features. If your policies prevent you from allowing automatic updates, see Update your Secure Device Connector.

Deploy a Secure Device Connector On Your VM

When using device credentials to connect Security Cloud Control to a device, it is a best practice to download and deploy a Secure Device Connector (SDC) in your network to manage the communication between Security Cloud Control and the device. Typically, these devices are non-perimeter based, do not have a public IP address, or have an open port to the outside interface. Adaptive Security Appliances (ASAs), FDM-managed devices, and Firepower Management Centers (FMCs) devices can all be onboarded to Security Cloud Control using device credentials.

The SDC monitors Security Cloud Control for commands that need to be executed on your managed devices, and messages that need to be sent to your managed devices. The SDC executes the commands on behalf of Security Cloud Control, sends messages to Security Cloud Control on behalf of the managed devices, and returns replies from the managed devices to Security Cloud Control.

The number of devices a single SDC can manage depends on the features implemented on those devices and the size of their configuration files. For the purposes of planning your deployment, however, we expect one SDC to support approximately 500 devices. See Use multiple Secure Device Connectors on one tenant , on page 185 for more information.

This procedure describes how to install an SDC in your network by using your own virtual machine image.

Note The preferred, easiest, and most reliable way to install an SDC is to download Security Cloud Control's SDC OVA image and install it.

Before you begin

- Security Cloud Control requires strict certificate checking and does not support a Web/Content Proxy between the SDC and the Internet.
- The SDC must have full outbound access to the Internecdot on TCP port 443 in order for it to communicate with Security Cloud Control.
- Devices that reach Security Cloud Control through the SDC must allow inbound access from the SDC on port 443.
- Review Connect to Security Cloud Control using Secure Device Connector for networking guidelines.
- VMware ESXi host installed with vCenter web client or ESXi web client.

Note We do not support installation using the vSphere desktop client.

- ESXi 5.1 hypervisor.

- Ubuntu 22.04 and Ubuntu 24.04 operating system.
- System requirements for a VM with only an SDC:
  - VMware ESXi host needs 2 CPUs.
  - VMware ESXi host needs a minimum of 2 GB of memory.
  - VMware ESXi requires 64 GB disk space to support the virtual machine depending on your provisioning choice. This value assumes you are using Logical Volume Management (LVM) with the partition so you can expand required disk space as needed.
- System requirements for a VM with an SDC and **a single** Secure Event Connector (SEC) for your tenant. (The SEC is a component used in Cisco Security Analytics and Logging).

  Each SEC you add to the VMware ESXi host requires an additional 4 CPUs and an additional 8 GB of memory.

  Therefore, these are the requirements for a VMware ESXi host with one SDC and one SEC:
  - VMware ESXi host needs 6 CPU.
  - VMware ESXi host needs a minimum of 10 GB of memory.
  - VMware ESXi requires 64 GB disk space to support the virtual machine depending on your provisioning choice.
- After you have updated the CPU and memory on the VM, power on the VM and ensure that the Secure Connectors page indicates that the SDC is in the "Active" state.
- Users performing this procedure should be comfortable working in a Linux environment and using the vi visual editor for editing files.
- If you are installing your on-premise SDC on a CentOS virtual machine, we recommend you install Yum security patches on a regular basis. Depending on your Yum configuration, to acquire Yum updates, you may need to open outbound access on port 80 as well as 443. You will also need to configure yum-cron or crontab to schedule the updates. Work with your security-operations team to determine if any security policies need to change to allow you to get the Yum updates.



Note **Before you get started**: Do not copy and paste the commands in the procedure into your terminal window, type them instead. Some commands include an "n-dash" and in the cut and paste process, these commands can be applied as an "m-dash" and that may cause the command to fail.

Procedure

Step 1 Log on to the Security Cloud Control tenant you are creating the SDC for.

Step 2 In the left pane, click **Administration** > **Integrations** > **Secure Connectors**.

Step 3 On the **Services** page, select the **Secure Connectors** tab, click the blue plus button, and select **Secure Device Connector**.

Step 4 Copy the bootstrap data in step 2 on the window to a notepad.

Step 5 Install a **CentOS 7 virtual machine** with at least the following RAM and disk space allotted to the SDC:

- 8GB of RAM
- 10GB disk space

Step 6 Once installed, configure basic networking such as specifying the IP address for the SDC, the subnet mask, and gateway.

Step 7 Configure a DNS (Domain Name Server) server.

Step 8 Configure a NTP (Network Time Protocol) server.

Step 9 Install an SSH server on CentOS for easy interaction with SDC's CLI.

Step 10 Run a Yum update and then install the packages: **open-vm-tools**, **nettools**, and **bind-utils**

```
[root@sdc-vm ~]# yum update -y
                [root@sdc-vm ~]# yum install -y open-vm-tools net-tools bind-utils
```

Step 11 Install the AWS CLI package; see https://docs.aws.amazon.com/cli/latest/userguide/awscli-install-linux.html.

Note
Do not use the **--user** flag.

Step 12 Install the Docker CE packages; see https://docs.docker.com/install/linux/docker-ce/centos/#install-docker-ce

Note
Use the "Install using the repository" method.

Step 13 Start the Docker service and enable it to start on boot:

```
[root@sdc-vm ~]# systemctl start docker
[root@sdc-vm ~]# systemctl enable docker
Created symlink from /etc/systemd/system/multiuser.target.wants/docker.service to
    /usr/lib/systemd/system/docker.service.
```

Step 14 Create two users: `cdo` and `sdc`. Use the `cdo` user to perform administrative tasks without directly accessing the root user. The `sdc` user will be designated for running the SDC docker container.

```
[root@sdc-vm ~]# useradd cdo
[root@sdc-vm ~]# useradd sdc -d /usr/local/cdo
```

Step 15 Set a password for the `sdc` user.

```
[root@sdc-vm ~]# passwd cdo
Changing password for user cdo.
New password: <type password>
Retype new password: <type password>
passwd: all authentication tokens updated successfully.
```

Step 16 Add the `sdc` user to the `wheel` group to give it administrative (sudo) privileges.

```
[root@sdc-vm ~]# usermod -aG wheel cdo
[root@sdc-vm ~]#
```

Step 17 When Docker is installed, there is a user group created. Depending on the version of CentOS/Docker, this may be called either "docker" or "dockerroot". Check the /etc/group file to see which group was created, and then add the sdc user to this group.

```
[root@sdc-vm ~]# grep docker /etc/group
 docker:x:993:
[root@sdc-vm ~]#
[root@sdc-vm ~]# usermod -aG docker sdc
[root@sdc-vm ~]#
```

Step 18 If the /etc/docker/daemon.json file does not exist, create it, and populate with the contents below. Once created, restart the docker daemon.

Note
Make sure that the group name entered in the "group" key matches the group you found in the /etc/group file the previous step.

```
[root@sdc-vm ~]# cat /etc/docker/daemon.json
         {
            "live-restore": true,
            "group": "docker"
         }
         [root@sdc-vm ~]# systemctl restart docker
         [root@sdc-vm ~]#
```

Step 19 If you are currently using a vSphere console session, switch over to SSH and log in with the`cdo` user. Once logged in, change to the `sdc` user. When prompted for a password, enter the password for the `cdo` user.

```
[CDO@sdc-vm ~]$ sudo su sdc
              [sudo] password for cdo: <type password for cdo user>
              [sdc@sdc-vm ~]$
```

Step 20 Change directories to **/usr/local/CDO**.

Step 21 Create a new file called `bootstrapdata` and paste the bootstrap data from Step 2 of the **Deploy an On-Premises Secure Device Connector** wizard into this file. **Save** the file. You can use `vi` or `nano` to create the file.

Step 22 The bootstrap data comes encoded in base64. Decode it and export it to a file called `extractedbootstrapdata`

```
[sdc@sdc-vm ~]$ base64 -d /usr/local/ CDO/bootstrapdata >
/usr/local/CDO/extractedbootstrapdata
             [sdc@sdc-vm ~]$
```

Run the cat command to view the decoded data. The command and decoded data should look similar to this:

```
[sdc@sdc-vm ~]$ cat /usr/local/ CDO/extractedbootstrapdata
              CDO_TOKEN="<token string>"
              CDO_DOMAIN="www.defenseorchestrator.com"
              CDO_TENANT="<tenant-name>"

CDO_BOOTSTRAP_URL="https://www.defenseorchestrator.com/sdc/bootstrap/tenant-name/<tenant-name-SDC>"
```

Step 23 Run the following command to export the sections of the decoded bootstrap data to environment variables.

```
[sdc@sdc-vm ~]$ sed -e 's/^/export /g' extractedbootstrapdata > sdcenv && source sdcenv
             [sdc@sdc-vm ~]$
```

Step 24 Download the bootstrap bundle from Security Cloud Control.

```
[sdc@sdc-vm ~]$ curl -O -H "Authorization: Bearer $CDO_TOKEN" "$CDO_BOOTSTRAP_URL"
              100 10314 100 10314 0 0 10656 0 --:--:-- --:--:-- --:--:-- 10654
              [sdc@sdc-vm ~]$ ls -l /usr/local/ CDO/*SDC
              -rw-rw-r--. 1 sdc sdc 10314 Jul 23 13:48 /usr/local/CDO/tenant-name-SDC
```

Step 25 Extract the SDC tarball, and run the `bootstrap.sh` file to install the SDC package.

```
[sdc@sdc-vm ~]$ tar xzvf /usr/local/CDO/tenant-name-SDC
                <snipped - extracted files>
                [sdc@sdc-vm ~]$
                [sdc@sdc-vm ~]$ /usr/local/ CDO/bootstrap/bootstrap.sh
                [2018-07-23 13:54:02] environment properly configured
                download: s3://onprem-sdc/toolkit/prod/toolkit.tar to toolkit/toolkit.tar
                toolkit.sh
                common.sh
                [2018-07-23 13:54:04] startup new container
                Unable to find image 'ciscodefenseorchestrator/sdc_prod:latest' locally
                sha256:d98f17101db10e66db5b5d6afda1c95c29ea0004d9e4315508fd30579b275458:
Pulling from
                ciscodefenseorchestrator/sdc_prod
                08d48e6f1cff: Pull complete
                ebbd10b629b1: Pull complete
                d14d580ef2ed: Pull complete
                45421d451ab8: Pull complete
                <snipped - downloads>
                no crontab for sdc
```

The SDC should now show "Active" in Security Cloud Control.

Bootstrap a Secure Device Connector on the Deployed Host

Procedure

Step 1 In the left pane, click **Admin** > **Secure Connectors**.

Step 2 In the left pane, click **Administration** > **Integrations** > **Secure Connectors**.

Step 3 On the **Services** page, select the **Secure Connectors** tab, click the + icon, and select **Secure Device Connector**.

Step 4 Copy the bootstrap data in step 2 on the window to a notepad.

Step 5 SSH into your VM using the admin user, typically `cdo`, and your chosen password.

Step 6 Switch to the `sdc` user using the command:

```
sudo su - sdc
```

Step 7 Bootstrap your new SDC using the command:

```
sdc bootstrap <paste-your-bootstrap-data-here>
```

Step 8 Select the version of the SDC you want to use.

We have three options for the SDC version:

- SDC 2024- This is the version that most will want to run.
- SDC 2024 with FIPS enabled- Choose this version if you are subject to FedRamp compliance.
- SDC Legacy- This version is no longer receiving feature updates and it is recommended to run SDC 2024 instead.

Step 9 The CLI pulls the container image and starts the SDC and you can validate that your SDC is active and operational on the user interface, and also on the host by running:

```
sdc show running
```

You should now see an SDC for your tenant.

Deploy a Secure Device Connector to vSphere Using Terraform

Before you begin

This procedure details how you can use the Security Cloud Control SDC Terraform module for vSphere in conjunction with the Security Cloud Control Terraform Provider to deploy an SDC to your vSphere. Ensure you review the following prerequisites before attempting to perform this task procedure:

- You have vSphere datacenter version 7 and above
- You have an admin account on the datacenter with permissions to do the following:
  - Create VMs
  - Create folders
  - Create content libraries
  - Upload files to content libraries
- Terraform knowledge

Procedure

Step 1 Create an API-only user in Security Cloud Control and copy the API token. To know how to create an API-only user, see Create API Only Users.

Step 2 Configure the Security Cloud Control Terraform provider in your Terraform repository by following the instructions in Security Cloud Control Terraform Provider.

Example:

```
terraform {
  required_providers {
    cdo = {
      source = "CiscoDevNet/cdo"
      version = "0.7.0"
    }
  }
}

provider "cdo" {
  base_url = "<the CDO URL you use to access CDO>"
  api_token = "<the API Token generated in step 1>"
}
```

Step 3 Write Terraform code to create a `cdo_sdc` resource using the Security Cloud Control Terraform provider. See the Terraform registry for Security Cloud Control-sdc resource for more information.

Example:

```
Resource "cdo_sdc" "my-sdc" {
  name = "my-sdc-in-vsphere"
}
```

The `bootstrap_data` attribute of this resource is populated with the value of the Security Cloud Control bootstrap data and is provided to the `cdo_sdc` Terraform module in the next step.

Step 4 Write Terraform code to create the SDC in vSphere using Security Cloud Control_sdc Terraform module.

Example:

```
data "cdo_tenant" "current" {}

module "vsphere-cdo-sdc" {
  source               = "CiscoDevNet/cdo-sdc/vsphere"
  version              = "1.0.0"
  vsphere_username     = "<replace-with-username-with-admin-privileges>"
  vsphere_password     = "<super-secure-password>"
  vsphere_server       = "<replace-with-address-of-vsphere-server>"
  datacenter           = "<replace-with-datacenter-name>"
  resource_pool        = "<replace-with-resource-pool-name>"
  cdo_tenant_name      = data.cdo_tenant.current.human_readable_name
  datastore            = "<replace-with-name-of-datastore-to-deploy-vm-in>"
  network              = "<replace-with-name-of-network-to-deploy-vm-in>"
  host                 = "<replace-with-esxi-host-address>"
  allow_unverified_ssl = <boolean; set to true if your vsphere server does not have a valid
 SSL certificate>
  ip_address          = "<sdc-vm-ip-address; must be in the subnet of the assigned network
 for the VM>"
  gateway              = "<replace-with-network-gateway-address>"
  cdo_user_password    = "<replace-with-password-for-cdo-user-in-sdc-vm>"
  root_user_password   = "<replace-with-password-for-root-user-in-sdc-vm>"
  cdo_bootstrap_data   = cdo_sdc.sdc-in-vsphere.bootstrap_data
}
```

Note that the VM created has two users—a `root` user and a user called `cdo`—and the IP Address of the VM is configured statically. The `cdo_bootstrap_data` attribute is given the value of the `bootstrap_data` attribute generated when the `cdo_sdc` resource is created.

Step 5 Plan and apply your Terraform using `terraform plan` and `terraform apply`, as you would normally.

See the Security Cloud Control Automation Repository in the CiscoDevNet for a complete example.

If your SDC stays in the onboarding state, connect to the vSphere VM using remote console, log in as the `cdo` user, and execute the following command:

```
sdc host status
```

Depending on the readout, you may need to manually run:

```
sdc host configure
```

Note The Security Cloud Control Terraform modules are published as Open Source Software under the Apache 2.0 license. You can file issues on GitHub if you require support.

Deploy a Secure Device Connector on an AWS VPC Using a Terraform Module

Before you begin

Review these prerequisites before attempting to deploy an SDC on your AWS VPC:

- Security Cloud Control requires strict certificate checking and does not support Web/Content Proxy inspection between the SDC and the Internet. If using a proxy server, disable inspection for traffic between the Secure Device Connector (SDC) andSecurity Cloud Control.
- See Connect Security Cloud Control to the Secure Device Connector to ensure proper network access.
- You require an AWS account, an AWS VPC with at least one subnet, and an AWS Route53-hosted zone.
- Ensure you have the Security Cloud Control bootstrap data, your AWS VPC ID, and its subnet ID handy.
- Ensure that the private subnet to which you deploy the SDC has a NAT gateway attached.
- Open traffic on the port on which your firewall management HTTP interface is running, from your firewalls to the Elastic IP attached to the NAT gateway.

Procedure

Step 1 Add the following lines of code in your Terraform file; make sure you manually enter inputs for variables:

```
module "example-sdc" {
  source              =
"git::https://github.com/cisco-lockhart/terraform-aws-cdo-sdc.git?ref=v0.0.1"
  env                 = "example-env-ci"
  instance_name       = "example-instance-name"
  instance_size       = "r5a.xlarge"
  cdo_bootstrap_data = "<replace-with-cdo-bootstrap-data>"
  vpc_id              = <replace-with-vpc-id>
  subnet_id           = <replace-with-private-subnet-id>
}
```

See the Secure Device Connector Terraform module for a list of input variables and descriptions.

Step 2 Register `instance_id` as an output in your Terraform code:

```
output "example_sdc_instance_id" {
  value = module. example-sdc.instance_id
}
```

You can use the `instance_id` to connect to the SDC instance for troubleshooting using the AWS Systems Manager Session Manager (SSM). See Outputs in the Secure Device Connector Terraform module for a list of available outputs.

What to do next:

For any troubleshooting of your SDC, you need to connect to the SDC instance using AWS SSM. See AWS Systems Manager Session Manager to know more about how to connect to your instance. Note that the ports to connect to the SDC instance using SSH are not exposed because of security reasons.

Note

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Migrate an On-Premises Secure Device Connector and Secure Event Connector from a CentOS 7 Virtual Machine to an Ubuntu Virtual Machine

Security Cloud Control's on-premises Secure Device Connector (SDC) has been installed on CentOS 7 virtual machines up to this point. Since CentOS 7 is now end-of-life and has been deprecated by Security Cloud Control, we have created this migration process to help you migrate all SDCs from CentOS 7 to an Ubuntu virtual machine.

Before You Migrate

- The SDC must have full outbound access to the internet on TCP port 443.
- The Ubuntu virtual machine running the SDC must have network access to the management interfaces of the devices it communicates with, such as ASAs and Cisco IOS devices.
- Any networking rules created for the IP address or FQDN of the old SDC VM to reach your devices should be recreated with the IP address or FQDN of the new SDC VM.
- The migration will take 10 to 15 minutes. During this time, your device will continue to enforce security policy and route network traffic, but you will not be able to communicate with it through the SDC.

Prerequisites

Deploy a new host by following the instructions on Deploy a VM for Running the Secure Device Connector and Secure Event Connector.

Host Configuration

Follow this procedure if you are migrating the SDC and/or SEC:

1. Download the new VM image here.
2. Unzip the CDO-SDC_VM.zip file. You should see three VM files named similarly to the following:
   - CDO-SDC-VM-708cd33-2024-05-30-2031-disk1.vmdk
   - CDO-SDC-VM-708cd33-2024-05-30-2031.mf
   - CDO-SDC-VM-708cd33-2024-05-30-2031.ovf
3. Deploy the VM you just downloaded.
4. Note the static IP address or FQDN you assigned to the new VM.
5. Using SSH, log in to the new VM as the `cdo` user.
6. At the prompt, enter the command:

   ```
   sudo sdc host configure
   ```

Note

- Follow the prompts in the migration script closely. The script is well-documented and will guide you through the migration process, explaining each step.
- At the end of the migration script, you will receive a message indicating that your SDC has been migrated to the new VM. The SDC will retain its name after the migration.

SDC Migration

Procedure:

1. Using SSH, log in to the old (CentOS) SDC as the `cdo` user.
2. Install the CLI using the command:

```
curl -O
https://s3.us-west-2.amazonaws.com/download.defenseorchestrator.com/sdc-cli/sdc-cli-package-latest.tgz
 && tar -xvf sdc-cli-package-latest.tgz && chmod +x ./install.sh && ./install.sh
```

3. Run the following command and follow the prompts:

```
sudo sdc migrate now
```

Verification:

1. Log in to your Security Cloud Control tenant.
2. In the left pane, click **Tools & Services** > **Secure Connectors**.
3. Select the SDC you migrated, and in the **Actions** pane, click **Request Heartbeat**.

Note Ensure that the SDC is in the **Active** state.

SEC Migration

Procedure:

1. Using SSH, log in to the old (CentOS) SDC as the `cdo` user.
2. Install the CLI using the command:

```
curl -O
https://s3.us-west-2.amazonaws.com/download.defenseorchestrator.com/sdc-cli/sdc-cli-package-latest.tgz
 && tar -xvf sdc-cli-package-latest.tgz && chmod +x ./install.sh && ./install.sh
```

3. Run the following command and follow the prompts:

```
sudo sdc eventing migrate
```

4. You can configure your devices to point to the new IP address of the SEC or you can shut down the old host and assign the new host the same IP address that the old host had so that the devices do not need to be updated.

Verification:

For information on the state of the SEC, see Use Health Check to Learn the State of your Secure Event Connector.

Additional Instructions

Do Not Restart Your Old SDC

After the migration is complete, do not restart your old SDC on the original virtual machine.

Revert Failed Migration

If the migration fails for any reason, or the result is not what you are expecting and you want to revert to the old SDC, follow the instructions below:

1. Log in to the new VM and switch to the **SDC** user.
2. Ensure the SDC is not currently running on the new VM using the command:

   ```
   docker ps
   ```
3. If the SDC is running, run the command:

   ```
   sdc stop
   ```
4. Confirm that the SDC has stopped running by executing `docker ps` again.
5. Log in to the old VM and run the command:

   ```
   sdc migrate revert
   ```
6. When the old SDC is active and visible in the UI, return to the new VM and execute the command:

   ```
   sdc delete <your-tenant-name-here>
   ```
7. Refresh the browser completely, click on the SDC, and verify that the IP of the old host appears in the sidebar.

   If the new IP still appears despite following these steps, request a new health check, refresh the browser, and check again.
8. To revert the SEC migration,run the command:

   ```
   sdc eventing revert
   ```

Change the IP Address of a Secure Device Connector

Before you begin

- You must be an admin to perform this task.
- The SDC must have full outbound access to the Internet on TCP port 443, or the port you have configured for device management.

Note You will not be required to re-onboard any devices to Security Cloud Control after changing the SDC's IP address.

Procedure

Step 1 Create an SSH connection to your SDC or open your virtual machine's console, and log in as the **CDO** user.

Step 2 To view your SDC VM's network interface configuration information before changing the IP address, use the command:

```
[cdo@localhost ~]$ ip addr
```

Step 3 To change the IP address of the interface, re-initiate the host configuration using the command:

```
[cdo@localhost ~]$ sdc host configure network
```

Step 4 Enter your password at the prompt.

Step 5 The configure script will then ask you about your networking configuration, write the new config file with the new IP and apply that configuration.

Note
You will lose your SSH connection at this time.

Step 6 Create an SSH connection using the new IP address you assigned to your SDC and log in.

Step 7 Your SDC should start automatically, but if it does not, run the following commands:

```
[cdo@localhost ~]$ sudo su - sdc
```

```
[cdo@localhost ~]$ sdc start
```

Note
If you are performing this procedure in the VM's console, when you confirm the values are correct, the connectivity status test is automatically run and the status is shown.

Step 8 You can also check your SDC's connectivity through the Security Cloud Control user interface. To do that, open the Security Cloud Control application and navigate to **Tools & Services** > **Secure Connectors Administration** > **Integrations** > **Secure Connectors** page.

Step 9 Refresh the page once and select the secure connector whose IP address you changed.

Step 10 On the **Actions** pane, click **Request Heartbeat**. You should see the **Heartbeat** requested successfully message, and the **Last Heartbeat** should display the current date and time.

Move an ASA from one Secure Device Connector to Another

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab.

Step 4 Select the ASA or ASAs you want to move to a different SDC.

Step 5 In the **Device Actions** pane, click **Update Credentials**.

Step 6 Click the Secure Device Connector button and select the SDC you want to move the device to.

Step 7 Enter the administrator username and password Security Cloud Control uses to log into the device and click **Update**. Unless they were changed, the administrator username and password are the same credentials you used to onboard the ASA. You do not have to deploy these changes to the device.

Note
If all the ASAs use the same credentials, you can move ASAs in bulk from one SDC to another. If the ASAs have different credentials, you have to move them from one SDC to another one at a time.

Rename a Secure Device Connector

Procedure

Step 1 In the left pane, choose **Administration** > **Integrations** > **Secure Connectors**.

Step 2 Select the SDC you want to rename.

Step 3 In the Details pane, click the edit icon next to the name of the SDC.

Step 4 Rename the SDC.

This new name will appear wherever the SDC name appears in the Security Cloud Control interface including the Secure Device Connectors filter of the **Security Devices** pane.

Specify a default Secure Device Connector

When you onboard devices that connect to Security Cloud Control Firewall Management through an SDC, they are associated with the default SDC for your tenant unless you specify another SDC during onboarding.

You can specify which SDC is selected by default on the Secure Connectors page:

Procedure

Step 1 In the left pane, choose **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 2 Select the SDC that you want to be the default.

Step 3 In the Actions pane, click **Make Default**. If you don't see the Make Default action, then the SDC already is the default SDC.

Update a Secure Device Connector manually

Use this task as a troubleshooting tool. The source says that the SDC is usually updated automatically and that you should not need to perform a manual update unless errors occur.

Procedure

Step 1 Connect to your SDC. You can connect using SSH or use the console view in your Hypervisor.

Step 2 Log in to the SDC as the admin user, typically **cdo**.

Step 3 Switch to the SDC user to update the SDC docker container:

```
[cdo@sdc-vm ~]$ sudo su sdc
               [sudo] password for cdo: <type password for cdo user>
               [sdc@sdc-vm ~]$
```

Step 4 Upgrade the SDC:

```
sdc upgrade
```

Note
Recommended updates and maintenance on the SDC Virtual Machine

Ensure that you monitor and apply updates to the SDC VM running on Ubuntu Linux following your organisation's internal IT security and patch management policies. We highly recommend regularly reviewing and applying relevant security patches to ensure that the SDC VM remains secure and functions optimally within your network environment.

Use multiple Secure Device Connectors on one tenant

You can install an unlimited number of SDCs on a tenant. Multiple SDCs let you manage more devices and place connectors in different network segments while keeping those devices in the same Security Cloud Control Firewall Management tenant.The procedure for deploying a second or later SDC is the same as the procedure for the first SDC.The first SDC name includes the tenant name and the number `1`. Each additional SDC is numbered in order.

- The procedure for deploying a second or subsequent SDC is the same for deploying your first SDC.
- The initial SDC for your tenant incorporates the name of your tenant and the number 1. Each additional SDC is numbered in order.

Find devices that sse the same Secure Device Connector

Follow this procedure to find devices that connect through the same SDC:

Procedure

Step 1 In the left pane, **Security Devices**.

Step 2 In the navigation bar, click **Inventory**.

Step 3 Click the **Devices** tab to locate the device.

Step 4 Click the appropriate device type tab.

Step 5 If there is any filter criteria already specified, click the **clear** button at the top of the **Security Devices** page to show all the devices and services you manage with Security Cloud Control.

Step 6 In the **Secure Device Connectors** section of the filter, check the name of the SDC(s) you're interested in. The **Security Devices** page displays only the devices that connect to Security Cloud Control through the SDC you checked in the filter.

Step 7 (Optional) Check additional filters in the filter menu to refine your search further.

Step 8 (Optional) When you're done, click the **clear** button at the top of the **Security Devices** page to show all devices and services you manage with Security Cloud Control.

Remove a Secure Device Connector

Deleting an SDC is not reversible. After you remove it, you cannot manage the devices that were connected to that SDC until you install a new SDC and reconnect the devices. Reconnecting devices can require you to enter administrator credentials again.

Before you remove an SDC, move the connected devices to another SDC or remove them from Security Cloud Control Firewall Management.

Procedure

Step 1 Remove any devices connected to the SDC you want to delete. You can do this one of two ways:

- Remove from Security Cloud Control any devices connected to the SDC you want to delete.
  - **a.** See Find all Devices that Connect to Security Cloud Control Using the Same SDC to identify all the devices used by the SDC.
  - **b.** In the **Security Devices** page, select all the devices you identified.
  - **c.** In the Device Actions pane, click **Remove** and click **OK** to confirm your action.

Step 2 In the left pane, choose **Tools & Services** > **Secure Connectors**.

Step 3 In the left pane, click **Administration** > **Integrations** > **Secure Connectors**.

Step 4 On the **Services** page with the **Secure Connectors** tab selected, click the blue plus button and select **Secure Device Connector**.

Step 5 In the Secure Connectors table, select the SDC you want to remove. Its device count should now be zero.

Step 6 In the Actions pane, click **Remove**. You receive this warning:

Warning
You are about to delete <sdc_name>. Deleting the SDC is not reversible. Deleting the SDC will require you to create and onboard a new SDC before you can onboard, or re-onboard, your devices.

Because you currently have onboarded devices, removing the SDC will require you to reconnect those devices and provide credentials again after setting up a new SDC.

- If you have any questions or concerns, click **Cancel** and contact Security Cloud Control support.
- If you wish to proceed, enter <sdc_name> in the text box below and click **OK**.

Step 7 In the confirmation dialog box, if you wish to proceed, enter your SDC's name as it is stated in the warning message.

Step 8 Click **OK** to confirm the SDC removal.

Open source and third-party license in SDC

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*** amqplib ***

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*** async ***

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*** bluebird ***

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*** command-line-args ***

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*** json-buffer ***

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*** json-stable-stringify ***

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*** json-stringify-safe ***

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*** log4js ***

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*** node-forge ***

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Onboard devices in Security Cloud Control Firewall Management

You can onboard both live devices and model devices to Security Cloud Control Firewall Management. Model devices are uploaded configuration files that you can view and edit using Security Cloud Control Firewall Management.

Most live devices and services require an open HTTPS connection so that the Secure Device Connector can connect Security Cloud Control Firewall Management to the device or service.

This chapter covers the following sections:

Supported devices, software, and hardware for Security Cloud Control Firewall Management

Security Cloud Control Firewall Management is a cloud-based management solution enabling the management of security policies and device configurations across multiple security platforms.

This section describes the supported device types, software, hardware, and constraints for managing firewall, cloud, SD-WAN, Cisco IOS, Cisco Umbrella, and management center integrations in Security Cloud Control Firewall Management.

Support scope

Security Cloud Control Firewall Management is a cloud-based management solution for security policies and device configurations across multiple security platforms. The source identifies support for these management areas:

- Cisco Secure Firewall ASA, both on-premises and virtual
- Cisco Secure Firewall Threat Defense (FTD), both on-premises and virtual
- Cisco Catalyst SD-WAN Manager
- Cisco Secure Firewall Management Center, on-premises

Security Cloud Control Firewall Management documentation identifies the devices, software, and hardware that Security Cloud Control Firewall Management supports. If the documentation does not explicitly claim support for a software version or device type, Security Cloud Control Firewall Management does not support it.

Cisco Secure Firewall ASA

Cisco Adaptive Security Appliance (ASA) is a security device that integrates firewall, VPN, and intrusion prevention capabilities. Security Cloud Control supports ASA device management to streamline configuration management and support regulatory compliance across the network infrastructure.

Cisco Secure Firewall Threat Defense

Cisco Secure Firewall Threat Defense integrates traditional firewall features with advanced threat protection capabilities. It includes security functions such as intrusion prevention, application control, URL filtering, and advanced malware protection.

A Secure Firewall Threat Defense device can be deployed on ASA hardware appliances, Cisco firewall hardware appliances, and virtual environments. You can manage threat defense devices through management interfaces such as Cisco Firewall Management Center, Security Cloud Control, and Firewall Device Manager.

Firewall Threat Defense integrates traditional firewall features with advanced threat protection capabilities. It offers comprehensive security functions, including intrusion prevention, application control, URL filtering, advanced malware protection, and so on. An FTD can be deployed on ASA hardware appliances, and Cisco firewall hardware appliances, and in virtual environments. Managing threat defense devices is possible through various management interfaces, such as Cisco Firewall Management Center and Security Cloud Control

For more information on software and hardware compatibility, see the Cisco Secure Firewall Threat Defense Compatibility Guide.

Cisco Secure Firewall Management Center

Security Cloud Control Firewall Management simplifies the management of on-premises Firewall Management Center by establishing a secure integration, discovering security devices, and enabling centralized policy management. Security policies such as firewall rules, VPN settings, and intrusion prevention policies can be efficiently managed and deployed across all devices under FMC.

ASA support specifics

Security Cloud Control Firewall Management support for ASA has these constraints:

- Security Cloud Control Firewall Management can manage all ASA platforms that run currently supported code versions, including ASAv instances.
- Security Cloud Control Firewall Management does not support ASA Services Module (ASASM).
- Security Cloud Control Firewall Management does not test end-of-life ASA code versions and does not recommend them for production.
- Use currently supported ASA code versions for optimal results.
- ASA 8.3 is not supported with the new policy view.
- Security Cloud Control Firewall Management does not manage the ASA FirePOWER module because the module runs a different operating system from ASA. Manage the ASA FirePOWER module separately with Secure Firewall Management Center or ASDM.
- End-of-life code and hardware might continue to work with Security Cloud Control Firewall Management. Because end-of-life code and hardware are not part of Security Cloud Control Firewall Management testing, correct operation with end-of-life software and hardware is not guaranteed or assured.

Refer to the version download page for Cisco "suggested release" or "gold star" versions.

- ASA versions 8.x, 9.1, and 9.2 do not support TLS 1.2 on the management plane and are considered insecure for ASA software management.

For a full discussion of ASA, ASDM, and hardware compatiblity, see the Cisco Secure Firewall ASA Compatibility guide.

Secure Firewall Threat Defense Device Support Specifics

Secure Firewall Threat Defense is Cisco's next generation firewall. It can be installed on a variety of hardware and virtual platforms; see the *Cisco Secure Firewall Threat Defense Compatibility Guide*.

Firewall Threat Defense with Secure Firewall Device Manager

You can add Security Cloud Control managment to threat defense Version 6.4+ with Firewall Device Manager. However, this option is only available upon request for those who already have device manager support enabled on their tenant. See:

- Open a Support Ticket with TAC, on page 861 to request this option.

Snort

Snort 3 is the default inspection engine for threat defense starting in threat defense Version 6.7 (with device manager) and Version 7.0 (with management center).

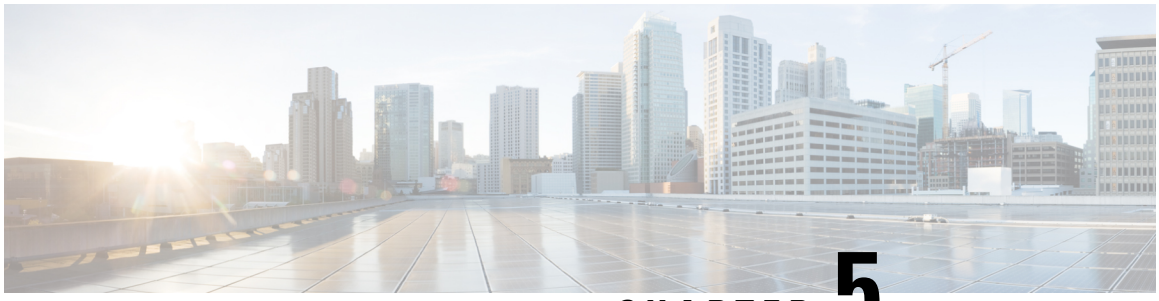


Important If you are still using the Snort 2 inspection engine, switch to Snort 3 now for improved detection and performance. Snort 2 will be deprecated in a future release and will eventually prevent threat defense upgrade.

Cloud Device Support Specifics

The following table describes software and device type support for cloud-based devices. Read the affiliated links for more information about onboarding and feature functionality for the device types in the table below:

Devices Types	Notes
Google Cloud Platform	Google Cloud Platform (GCP) receives updates through the GCP console. Refer to Google Cloud documentation for more information about the platform and available services.
Microsoft Azure	Azure receives updates through the Azure console. Refer to Azure documentation for more information about the platform and available services.



CHAPTER 5

Onboard a Firewall Threat Defense Device

There are various ways to onboard a Firewall Threat Defense device for management. See the following use cases for what best meets your environment:

Firewall Threat Defense Devices Managed by Cloud-delivered Firewall Management Center

Devices that are to be managed by the Cloud-delivered Firewall Management Center can be brand new, reimaged, or currently managed by another managing platform. For onboarding prcoedures, see the Onboarding Overview, on page 199 for Cloud-delivered Firewall Management Center.

Firewall Threat Defense Devices Managed by On-Premises Firewall Management Center

Devices that are managed by the on-premises Firewall Management Center are not actually onboarded to Security Cloud Control directly; when you onboard the on-premises Firewall Management Center, all of the devices that are managed by that platform are onboarded by association and are nested under the "FMC" device entry in the **Security Devices** page. For more information, see Onboard an On-Premises Firewall Management Center to Security Cloud Control Firewall Management, on page 223.

- Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center, on page 199

Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center

Onboarding Overview

Review the following use cases and supported sofware versions that are compatible with Cloud-Delivered Firewall Management Center management.

Note You must ensure that the Firewall Threat Defense device ports have external and outbound access for the Cloud-Delivered Firewall Management Center to onboard them. There is no requirement for an on-premises or cloud-based Security Device Controller (SDC) for this operation. For more information, see Network Requirements.

To send Firewall Threat Defense Syslog events to the Cisco cloud, you can set up the Secure Event Connector (SEC). For more information, see Installing Secure Event Connectors.

Firewall Threat Defense Devices Currently Managed by Cloud-Delivered Firewall Management Center

The following scenarios occur when you either move or migrate a device to the Cloud-Delivered Firewall Management Center:

- If you delete a device from an on-premises Firewall Management Center or Secure Firewall Threat Defense Firewall Device Manager to onboard to the Cloud-Delivered Firewall Management Center, the change of managers wipes any policies configured through the on-premises Firewall Management Center.
- If you **migrate** a device from an on-premises Firewall Management Center to the Cloud-Delivered Firewall Management Center, the device retains the majority of your previously configured policies.

Note If you do not know if your device is already managed by an alternative manager, use the `show managers` command in the device's CLI.

Onboarding Methods

Cloud-Delivered Firewall Management Center supports the following onboarding methods:

- Registration Key - Onboard a device with a registration key. The initial device setup wizard is complete on the device.
- Zero-Touch Provisioning - Onboard a new factory-shipped device with its serial number. Note that this method only supports Firepower 1000, Firepower 2100, or Secure Firewall 3100 devices.
- Zero-Touch Provisioning using a device template - Onboard new factory-shipped devices using serial numbers and a device template. Note that this method only supports Firepower 1000, Firepower 2100, Secure Firewall 1200 or Secure Firewall 3100 devices.

Prerequisites to Onboard a Device to Cloud-Delivered Firewall Management Center

Onboard Limitations and Requirements

Be aware of the following limitations when onboarding a device to the Cloud-Delivered Firewall Management Center:

- Devices **must** be running version 7.2 and later.

- You can migrate an HA pair that is managed by an On-Premises Firewall Management Center by following the Migrate FTD to Cloud-Delivered Firewall Management Center process. Confirm both peers are in a healthy state prior to migrating.
- Devices managed locally by Firewall Device Manager can be onboarded using the serial number.
- Firewall Threat Defense devices can be onboarded to Cloud-Delivered Firewall Management Center using zero-touch provisioning if they are new (just unboxed) or have undergone a factory reset.
- If the device is managed by an on-premises Firewall Management Center, you can either onboard the device to Cloud-Delivered Firewall Management Center or migrate the device. Migrating retains any existing policies and objects, whereas onboarding the device removes most policies and all objects. See Migrate FTD to Cloud-Delivered Firewall Management Center for more information.
- If your device is currently managed by a Firewall Device Manager, unregister all your smart licenses before you onboard the device. Even if you switch device management, the Cisco Smart Software Manager will retain the smart licenses.
- If you have previously onboarded a device that was managed by a Firewall Device Manager and deleted the device from Security Cloud Control with the intention of re-onboarding for cloud management, you **must** register the Firewall Device Manager to the Security Services Exchange cloud after deleting the device. See the "Access Security Services Exchange" chapter in the *Firepower and Cisco SecureX Threat Response Integration Guide.*

Tip Onboarding a device to the Cloud-Delivered Firewall Management Center removes any policies and most objects configured through the previous manager. If your device is currently managed by an on-premises Firewall Management Center, it is possible to migrate the device and retain your policies and objects. See Migrate FTD to Cloud-Delivered Firewall Management Center for more information.

Network Requirements

Before you onboard a device, ensure the following ports have external and outbound access. Confirm the following ports on the device are allowed. If communication ports are blocked behind a firewall, onboarding the device may fail.

Note You cannot configure these ports in the Security Cloud Control UI. You must enable these ports through the device's SSH.

Table 20: Device Port Requirements

Port	Protocol / Feature	Details
443/tcp	HTTPS	Send and receive data from the internet.
443	HTTPS	Communicate with the AMP cloud (public or private)

Port	Protocol / Feature	Details
8305/tcp	Appliance communications	Securely communicate between appliances in a deployment.

Management and Data Interfaces

Make sure your device is correctly configured with either a management or data interface.

To configure a management or data interface on your device, see Complete the initial configuration of a Secure Firewall Threat Defense device using the CLI, on page 856.

Onboard a Device with a CLI Registration Key

Use the procedure below to onboard a device for Cloud-Delivered Firewall Management Center with a CLI registration key.

Note If your device is currently managed by an on-premises Firewall Management Center, onboarding the device will fail. You can either delete the device from the on-premises Firewall Management Center and onboard as a fresh, new device with no policies or objects, or you can migrate the device and retain the existing policies and objects. See Migrate FTD to Cloud-Delivered Firewall Managmenet Center for more information.

Important You can create a Security Cloud Control-managed, standalone logical Firewall Threat Defense device using the Secure Firewall chassis manager or the FXOS CLI.

Before you begin

Before you onboard a device, be sure to complete the following tasks:

- Cloud-Delivered Firewall Management Center is enabled for your tenant.
- Confirm the device's CLI configuration is successfully completed. See Complete the initial configuration of a Secure Firewall Threat Defense device using the CLI, on page 856 for more information.
- Review the prerequesites and limitations before you onboard the device. See "Prerequisites to Onboard a Device to Cloud-Delivered Firewall Management Center" in Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control for more information.
- The device can be configured for either local management with Secure Firewall Device Manager or remote management with Secure Firewall Management Center.

Note If you want the device to maintain management from the Secure Firewall Device Manager, select **FDM** and see for more information.

- Device must be running version 7.2.0 and later.

- You have reset the device's SSH password as part of the bootstrap process. If you have you not reset the SSH password, Security Cloud Control recommends using the Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 method.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click **Onboard device or service** ( ) icon.

Step 3 Click the **FTD** tile.

Step 4 Under **Management Mode**, select **FTD**. By selecting **FTD** under **Management Mode**, you will not be able to manage the device using the previous management platform. All existing policy configurations except for interface configurations will be reset. You must re-configure policies after you onboard the device.

Note
If you are using the 90-day Evaluation License, the number of days left is listed under the **FTD** and **FDM** toggle options. Click the **Manage Subscription License** link to opt into a full subscription license. See Managed Device Licensing Types for more information.

Step 5 Select **Use CLI Registration Key** as the onboarding method.

Step 6 Enter the device name in the **Device Name** field and click **Next**.

Step 7 In the **Policy Assignment** step, use the drop-down menu to select an access control policy to deploy once the device is onboarded. If you have no policies configured, select the **Default Access Control Policy**.

Step 8 Specify whether the device you are onboarding is a physical or virtual device. If you are onboarding a virtual device, you must select the device's performance tier from the drop-down menu.

Step 9 Select the subscription licenses you want to apply to the device. Click **Next**.

Step 10 Security Cloud Control generates a command with the registration key. Connect to the device you are onboarding using SSH. Log in as "admin" or a user with equivalent admin privileges and paste the entire registration key as is into the device's CLI.

Note: For Firepower 1000, Firepower 2100, ISA 3000, and Firewall Threat Defense Virtual devices, open an SSH connection to the device and log in as `admin`. Copy the entire registration command and paste it into the device's CLI interface at the prompt. In the CLI, enter **Y** to complete the registration. If your device was previously managed by Firewall Device Manager, enter **Yes** to confirm the submission.

Step 11 Click **Next** in the Security Cloud Control onboarding wizard.

Step 12 (Optional) Add labels to your device to help sort and filter the **Security Devices** page. Enter a label and select the blue plus button. Labels are applied to the device after it's onboarded to Security Cloud Control.

Once the device is synchronized, select the device you just onboarded from the **Security Devices** page and select any of the options listed under the **Device Management** pane located to the right. We strongly recommend the following actions:

- If you did not already, create a custom access control policy to customize the security for your environment. See Access Control Overview in *Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control* for more information.
- Enable Cisco Security Analytics and Logging (SAL) to view events in the Security Cloud Control dashboard **or** register the device to an Secure Firewall Management Center for security analytics. See

Cisco Security Analytics and Logging in *Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control* for more information.

Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning

Only the Firepower 1000, Firepower 2100, Secure Firewall 1200, and Secure Firewall 3100 devices can be onboarded with the zero-touch provisioning method.

Before you begin

Confirm that the following is completed before onboarding:

- You have a Security Cloud Control tenant. If you do not, see Request a Security Cloud Control Tenant for more information.
- Cloud-Delivered Firewall Management Center is enabled for your tenant.
- The device is freshly installed but has never been logged into by either the device CLI, a Firewall Management Center, or the Firewall Device Manager.
- The device is running version 7.2 or later.
- The device's outside or management interface should be able to access the Security Services Exchange domain registration.us.sse.itd.cisco.com.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click **Onboard device or service** ( ) icon.

Step 3 Click the **FTD** tile.

Step 4 Under **Management Mode**, select **FTD**. By selecting **FTD** under **Management Mode**, you will not be able to manage the device using the previous management platform. All existing policy configurations except for interface configurations will be reset. You must re-configure policies after you onboard the device.

Note
If you are using the 90-day Evaluation License, the number of days left is listed under the **FTD** and **FDM** toggle options. Click the **Manage Subscription License** link to opt into a full subscription license. See Managed Device Licensing Types for more information.

Step 5 Click the **Use Serial Number** tile.

Step 6 Select Cloud-Delivered Firewall Management Center from the drop-down list. Click **Next**.

For information on onboarding a threat defense device to On-Prem Firewall Management Center, see Onboard a Threat Defense Device to On-Prem Firewall Management Center using Zero-Touch Provisioning.

Step 7 Enter the **Device Serial Number** and the **Device Name**. Select **Next**.

Step 8 Choose an option depending on whether the device is logged into and configured for a manager:

- If your device is brand new and has never been configured for a manager, click **Yes, this new device has never been logged into or configured for a manager**.
- If your device has been previously registered for a manager or is **still** registered to a manager, click **No, this device has been logged into and configured for a manager**.

Step 9 Click **Next**.

Step 10 In the **Policy Assignment** step, use the drop-down menu to select an access control policy to deploy once the device is onboarded. If you have no policies configured, select the **Default Access Control Policy**.

Step 11 Select the subscription licenses you want to apply to the device. Click **Next**.

Step 12 Once the device is synchronized, select the device you just onboarded from the **Security Devices** page and select any of the options listed under the **Device Management** pane located to the right. We strongly recommend these actions:

- If you did not already, create a custom access control policy to customize the security for your environment.

  For more information, see Access Control Overview.

- You can enable Cisco Security Analytics and Logging to view events in the Security Cloud Control dashboard, or register the device to a Secure Firewall Management Center for security analytics.

  For more information, see Cisco Security Analytics and Logging.

Onboard a Secure Firewall Threat Defense Cluster

This task enables you to register a Secure Firewall Threat Defense cluster with Cloud-Delivered Firewall Management Center for centralized management and policy enforcement.

The following table provides information about device models that support cluster onboarding and creation on the Cloud-Delivered Firewall Management Center:

Secure Firewall Threat Defense Platforms	Minimum Secure Firewall Threat Defense Version for Cluster Management	Support cluster creation from Cloud-Delivered Firewall Management Center?
VMware, KVM	7.2.1	Yes
AWS, GCP	7.2.1	No
Azure	7.3	No
Secure Firewall 3100	7.2.1	Yes
Firepower 4100	7.2.x	No
Secure Firewall 4200	7.4	Yes
Firepower 9300	7.2.x	No

Note When you onboard a Secure Firewall Threat Defense cluster to Cloud-Delivered Firewall Management Center, you register only the cluster CONTROL NODE. After the CONTROL NODE registers, Cloud-Delivered Firewall Management Center discovers the DATA nodes in the cluster.

Before you begin

Review these limitations:

- Firepower 4100 and Firepower 9300 devices must be clustered through the device's Firewall Chassis Manager.
- Secure Firewall 3100 devices, Secure Firewall 4200 devices, KVM, and VMware environments must be clustered through the Secure Firewall Management Center UI.
- Azure, AWS, and GCP environment clusters must be created through their own environment and onboarded to Secure Firewall Management Center.
- Verify that the Secure Firewall Threat Defense virtual devices are successfully configured as a cluster before you register the cluster with Cloud-Delivered Firewall Management Center.

  For example, in the Secure Firewall Threat Defense CLI, enter the `show cluster info` command. Confirm that the output shows the cluster as `On`, one unit in `CONTROL_NODE` state, and the remaining units in `DATA_NODE` state.

```
> show cluster info
Cluster mAZ-ngfw-cl: On
    Interface mode: individual
Cluster Member Limit : 16
    This is "74-a" in state DATA_NODE
        ID        : 2
        Version   : 9.22(1)1
        Serial No.: 9AUVQ3DSF66
        CCL IP    : 1.1.1.74
        CCL MAC   : 02e2.778f.d3ed
        Module    : NGFWv
        Resource  : 4 cores / 7680 MB RAM
        Last join : 07:28:26 UTC Sep 25 2024
        Last leave: 07:28:11 UTC Sep 25 2024
Other members in the cluster:
    Unit "135-b" in state CONTROL_NODE
        ID        : 0
        Version   : 9.22(1)1
        Serial No.: 9A6W0A51KGK
        CCL IP    : 1.1.2.135
        CCL MAC   : 1294.34ae.4ce9
        Module    : NGFWv
        Resource  : 4 cores / 7680 MB RAM
        Last join : 09:45:52 UTC Sep 24 2024
        Last leave: N/A
    Unit "183-c" in state DATA_NODE
        ID        : 1
        Version   : 9.22(1)1
        Serial No.: 9A1S400HL8F
        CCL IP    : 1.1.3.183
        CCL MAC   : 0aff.e889.f193
        Module    : NGFWv
        Resource  : 4 cores / 7680 MB RAM
        Last join : 07:29:29 UTC Sep 25 2024
        Last leave: 07:28:11 UTC Sep 25 2024
>
```

Follow these steps to onboard a Secure Firewall Threat Defense cluster:

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click **Onboard device or service** ( ) icon.

Step 3 Click the **FTD** tile.

Step 4 Under **Management Mode**, select **FTD**. By selecting **FTD** under **Management Mode**, you will not be able to manage the device using the previous management platform. All existing policy configurations except for interface configurations will be reset. You must re-configure policies after you onboard the device.

Note
If you are using the 90-day Evaluation License, the number of days left is listed under the **FTD** and **FDM** toggle options. Click the **Manage Subscription License** link to opt into a full subscription license. See Managed Device Licensing Types for more information.

Step 5 Select **Use CLI Registration Key**.

Step 6 Enter the device name in the **Device Name** field and click **Next**.

Step 7 In the **Policy Assignment** step, use the drop-down menu to select an access control policy to deploy once the device is onboarded. If you have no policies configured, select the **Default Access Control Policy**.

Step 8 Specify whether the device you are onboarding is a physical or virtual device. If you are onboarding a virtual device, you must select the device's performance tier from the drop-down menu.

Step 9 Select the subscription licenses you want to apply to the device. Click **Next**.

Step 10 Security Cloud Control generates a command with the registration key. Paste the entire registration key into the device's CLI without making changes.

Step 11 (Optional) Add labels to your device to help sort and filter the **Security Devices** page. Enter a label and select the blue plus button. Labels are applied to the device after it's onboarded to Security Cloud Control.

Once the device is synchronized, select the device you just onboarded from the **Security Devices** page and select any of the options listed under the **Device Management** pane located to the right. We strongly recommend the following actions:

- If you did not already, create a custom access control policy to customize the security for your environment. See Access Control Overview in *Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control* for more information.
- Enable Cisco Security Analytics and Logging (SAL) to view events in the Security Cloud Control dashboard **or** register the device to an Secure Firewall Management Center for security analytics. See Cisco Security Analytics and Logging in *Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control* for more information.

Onboard a Chassis

You can add a Firepower 4100/9300 chassis to the Cloud-Delivered Firewall Management Center. The management center and the chassis share a separate management connection using the chassis MGMT interface. The Firewall Management CenterCloud-Delivered Firewall Management Center offers chassis-level health alerts. For configuration, you still need to use the Firewall Chassis Manager or FXOS CLI.

Security Cloud Control does not record the processes on the **Workflow** page when you onboard a chassis or provision a multi-instance Firewall Management CenterFirewall Threat Defense device from the Cloud-Delivered Firewall Management Center chassis manager page.

Note To onboard the Secure Firewall 3100/4200 multi-instance chassis, see the multi-instance chapter.

Procedure

Step 1 Connect to the chassis FXOS CLI, either using the console port or SSH.

Step 2 In the left pane, click **Security Devices**.

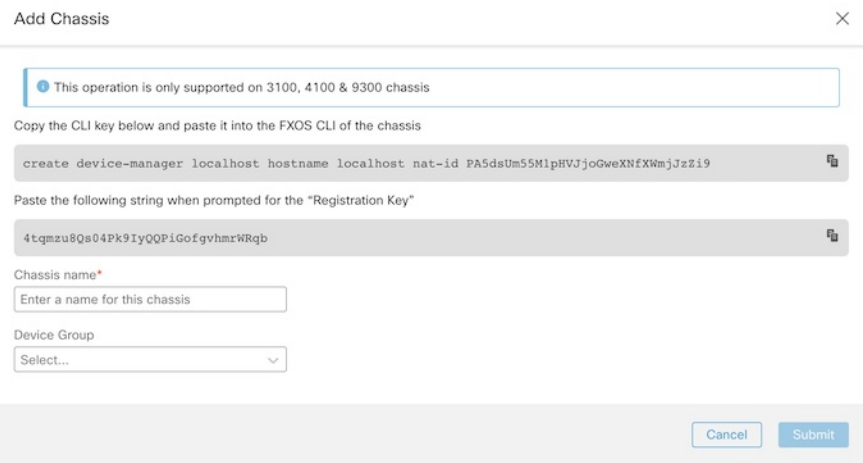
Step 3 Click **Onboard device or service** ( ) icon.

Step 4 Click the **FTD Chassis** tile to open the **Add Chassis** dialog box.

Figure 6: FTD Chassis Tile



Figure 7: Add Chassis



Step 5 Click **Copy** ( ) to copy the top generated command, then paste it at the FXOS CLI of your chassis.

Step 6 When prompted for the Registration Key at the FXOS CLI, click **Copy** ( ) on the **Add Chassis** dialog box for the generated registration key and paste it at the FXOS CLI.

You can disconnect from the FXOS CLI at this point.

Step 7 In the Cloud-Delivered Firewall Management Center **Chassis Name** field, enter a name for the chassis as you want it to display in the Firewall Management CenterCloud-Delivered Firewall Management Center.

Step 8 (Optional) Add the chassis to a **Device Group**.

Step 9 Click **Submit**.

The chassis is added to the **Device** > **Device Management** page.

Troubleshooting

Use the following scenarios to troubleshoot any onboarding issues.

Troubleshoot Onboarding a Device to the Cloud-Delivered Firewall Management Center Using the CLI Registration Key

Error: Device Remains in Pending Setup State After Onboarding

When a device fails to register, the device's connectivity status is displayed as **Pending Setup**. In the panel located to the right, Security Cloud Control displays a **Registration Failed** message as well as a **Retry Onboarding** button to immediately allow you to reattempt onboarding the device.

If you fail to execute the `configuration manager` command in the device CLI within 3 mins after onboarding it to Security Cloud Control, the device's registration attempt expires and results in a registrationg failure. Use the following procedure to resolve the issue:

Procedure

Step 1 Log into Security Cloud Control and navigate to the **Security Devices** page. Locate the device that failed to register.

Step 2 In the panel located to the right, locate the **Registration Failed** window. Beside the device's CLI registration key, click **Copy**. This actions copies the CLI key to a local clipboard.

Step 3 Open an SSH connection to the device and log in as `admin`.

Step 4 Paste the CLI registration key into the device's CLI interface. In the CLI, enter **Y** to complete the registration. If your device was previously managed by Firewall Device Manager, enter **Yes** to confirm the submission.

Troubleshoot Onboarding a Device to Cloud-Delivered Firewall Management Center Using the Serial Number

Device is Offline or Unreachable

If the device is unreachable during the onboarding proess, or at any point post-onboarding, Security Cloud Control displays an **Unreachable** connectivity status. The device will not be able to fully onboard to Security Cloud Control until the device is able to connect. The following scenarios might be the cause:

- The device is cabled incorrectly.
- Your network may require a static IP address for the device.
- Your network uses custom DNS, or there is external DNS blocking the network.
- If your device is associated with the European region (https://defenseorchestrator.eu/), you may need to enable PPPoE authentication.For other domains, review the domain requirements.
- The device may be blocked by a firewall, or is incorrectly blocking a port for connectivity. Review the device Network Requirements, on page 201 and confirm the correct outgoing ports are enabled.

Error: Serial Number Already Claimed

The Device was Purchased From an External Vendor

If the device was purchased from an external vendor and fails to onboard with a **Serial Number Already Claimed** error, it's possible the device is still associated to the vendor's tenant. Use the following steps to claim the device and its serial number:

1. Delete the device from your Security Cloud Control tenant.
2. Install the FXOS image on the device. For more information, see the "Reimage Procedures" chapter of the Cisco FXOS Troubleshooting Guide for the Firepower 1000/21000 and Secure Firewall 3100 Firepower Threat Defense guide.
3. Connect a laptop to the device's console port.
4. Connect to the FXOS CLI and log in as **admin**.
5. In the FXOS CLI, connect to **local-mgmt** with the `firepower # connect local-mgmt` command.
6. Execute the `firepower(local-mgmt) # cloud deregister` command to deregister the device from the cloud tenancy.
7. Once the device is successfully unregistered, the CLI interface returns a success message. An example of the message:

   ```
   Example: firepower(local-mgmt) # cloud deregister Release Image Detected RESULT=success
    MESSAGE=SUCCESS 10, X-Flow-Id: 2b3c9e8b-76c3-4764-91e4-cfd9828e73f9
   ```

Note If the device was never registered to another Security Cloud Control tenant, the message above states `RESULT=success MESSAGE=DEVICE_NOT_FOUND`.

8. Onboard the device to your Security Cloud Control tenant with its serial number. See Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 for more information.

The Device is Claimed By a Security Cloud Control Tenant in Another Region

The device may have been previously managed by another Security Cloud Control instance in a different region and is still registered to that tenant.

If you **do** have access to the tenant the device is currently registered to, use the following procedure:

1. Delete the device from the incorrect Security Cloud Control tenant.
2. Log into the device's Firewall Device Manager UI.
3. Navigate to **System Settings** > **Cloud Services**.
4. Click **Cloud Services** and select **Unregister Cloud Services** from the drop-down list.
5. Confirm the action and click **Unregister**. This action generates a warning to indicate that the device has been removed from Security Cloud Control. This is expected behavior.

6. Log into Security Cloud Control tenant in the correct region and onboard the device. See Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 for more information.
7. Navigate to **System Settings** > **Cloud Services**.
8. Click **Cloud Services** and select **Unregister Cloud Services** from the drop-down list.
9. Select the **Auto-enroll with Tenancy from Security Cloud Control** and click **Register**. The device maps to the new tenant that belongs to the new region and Security Cloud Control onboards the device.

If you **do not** have access to the tenant, use the procedure below:

1. Connect to the FXOS CLI from the console port and log in as **admin**. For information on how to log into the FXOS CLI, see Accessing the FXOS CLI.
2. In the FXOS CLI, connect to **local-mgmt** with the `firepower # connect local-mgmt` command.
3. Execute the `firepower(local-mgmt) # cloud deregister` command to deregister the device from the cloud tenancy.
4. Once the device is successfully unregistered, the CLI interface returns a success message. An example of the message:

```
Example: firepower(local-mgmt) # cloud deregister Release Image Detected RESULT=success
 MESSAGE=SUCCESS 10, X-Flow-Id: 2b3c9e8b-76c3-4764-91e4-cfd9828e73f9
```

Note If the device was never registered to another Security Cloud Control tenant, the message above states `RESULT=success MESSAGE=DEVICE_NOT_FOUND.`

5. In your Security Cloud Control tenant in the correct domain, onboard the device. See Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 for more information.
6. In the device's Firewall Device Manager UI, navigate to **System Settings** > **Cloud Services**.
7. Select the **Auto-enroll with Tenancy from Security Cloud Control** and click **Register**. The device maps to the new tenant that belongs to the new region and Security Cloud Control onboards the device.

Error: Claim Error

If you enter the wrong serial number when onboarding a device, Security Cloud Control generates a **Claim Error** status.

Note Confirm that the device is claimed in the correct region within Security Cloud Control.

Resolve this issue with the provedure below:

Procedure

Step 1 Log into Security Cloud Control and navigate to the **Security Devices** page. Locate the device with the error.

Step 2 Select the device so it is highlighted and **Remove** the device from Security Cloud Control.

Step 3 Confirm the following:

- The device is online and can reach the internet.
- The device has not already been onboarded to your Security Cloud Control instance or claimed by a Security Cloud Control tenant in another region.

Step 4 Locate the device's serial number. You can use one of the following methods:

- For the 1000, 2100 and 3100 series model, locate the serial number on the physical device.
- Open an SSH connection to the device and issue the `show serial-number` command.
- If the device is currently FDM-managed, log into the Firewall Device Manager UI and locate the serial number on the **Cloud Services** page.

Step 5 In Security Cloud Control, onboard the device with the correct serial number. See Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 for more information.

Error: Failed to Claim

If you see an **Error: Failed to Claim** connectivity status or error message after attempting to onboard a device, the following might be the cause:

- The Security Services Exchange platform may have temporary issues that result in no connectivity.
- The Security Cloud Control server may be down.

Follow the procedure below to resolve this issue:

Procedure

Step 1 Log into Security Cloud Control and navigate to the **Security Devices** page. Locate the device that failed to register.

Step 2 Select the device so it is highlighted and **Remove** the device from your Security Cloud Control tenant.

Step 3 Wait at least 10 minutes before attempting to onboard the device back to your Security Cloud Control tenant. See Onboard a Firewall Threat Defense Device to Cloud-Delivered Firewall Management Center using Zero-Touch Provisioning, on page 204 for more information.

If you are still unable to claim the device, review the device's workflow to see is there is an error message. If there is,Export the Workflow and open a support case to further troubleshoot the issue.

Error: Provisional Error

Device Password Has Not Been Changed

If you did not change the default password of the device when configuring the device for remote management and selected the **No, this device has been logged into and configured for a manager** option when onboarding the device to Security Cloud Control, the device will generate an **UnProvisioned** connectivity status in the **Security Devices** page.

Use the following procedure to resolve this issue:

1. Log into Security Cloud Control and navigate to the **Security Devices** page.
2. Locate and select the device with the **UnProvisioned** connectivity status so it is highlighted.
3. In the pane located to the right, locate the **Change Password** window.
4. Click **Change Password** and enter a new password for your device. This overwrites the default password.

It may take a few minutes for the device to onboard and fully synchronize to Security Cloud Control.

Device Password Has Already Been Changed

If you **did** change the default password of the device when configuring the device for remote management and selected the **Is this a new device that has never been logged into or configured before?** option when onboarding the device to Security Cloud Control, Security Cloud Control generates an **UnProvisioned** connectivity status in the **Security Devices** page.

Use the following procedure to resolve this issue:

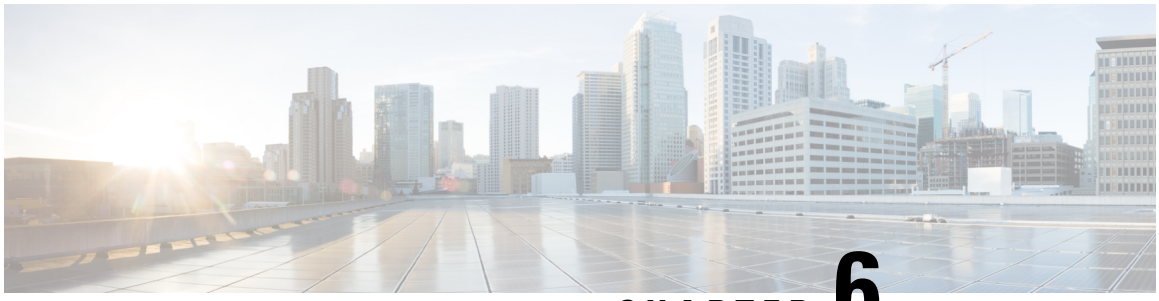
1. Log into Security Cloud Control and navigate to the **Security Devices** page.
2. Locate and select the device with the **UnProvisioned** connectivity status so it is highlighted.
3. In the pane located to the right, locate the **Confirm and Proceed** window.
4. Click **Confirm and Proceed**. This action ignores the password that was provided in the onboarding wizard and reinstates the default password for the device. Security Cloud Control then continues to onboard the device.

Other Provisional Error Scenarios

Regardless of the default password configuration of the device, it is still possible for a device to result in an **UnProvisioned** conectivity status during the onboarding process. If you confirm the password selection in the onboarding wizard is accurate for the state of the device, consider the following options to resolve the issue:

- Select the device so it is highlighted. In the window located on the right pane of the screen, click **Retry** to force Security Cloud Control to re-onboard the device with existing provisional parameters.
- Delete the device from the **Security Devices** page and attempt to re-onboard the device.
- In the device's Firewall Device Manager UI, navigate to **System Settings** > **Cloud Services**. Select the **Auto-enroll with Tenancy from Security Cloud Control** and click **Register**.

If you are still unable to claim the device, review the device's workflow to see is there is an error message. If there is,Export the Workflow and open a support case to further troubleshoot the issue.



CHAPTER 6

Onboard Secure Firewall ASA

This chapter explains the various different methods using which a Secure Firewall ASA can be onboarded.

- Onboard Secure Firewall ASA, on page 215
- Onboard ASA device to Security Cloud Control Firewall Management, on page 215
- Onboard a high availability pair of ASA devices to Security Cloud Control Firewall Management, on page 217
- Secure Firewall ASA multi-context mode onboarding to Security Cloud Control Firewall Management, on page 218
- Onboard multiple ASAs to Security Cloud Control Firewall Management, on page 219
- Create and import an ASA model to Security Cloud Control Firewall Management, on page 221
- Configuration import for offline device management, on page 222

Onboard Secure Firewall ASA

This chapter explains the various different methods using which a Secure Firewall ASA can be onboarded.

Onboard ASA device to Security Cloud Control Firewall Management

This task connects a single live ASA device to Security Cloud Control Firewall Management for centralized management and monitoring.

Use this procedure to onboard a single live ASA device, not an ASA model, to Security Cloud Control Firewall Management. If you want to onboard multiple ASAs at once, refer to Onboard ASAs in Bulk.

Before you begin

Device Prerequisites

- The device must be running version 8.4 or later.

Note TLS 1.2 became available for the ASA management plane in version 9.3(2). To onboard to Security Cloud Control Firewall Management using version 9.3(2), a local SDC is required.

- The running configuration file of your ASA must be less than 4.5 MB.
- IP addressing: Each ASA, ASAv, or ASA security context must have a unique IP address, and the SDC must connect to it on the interface configured to receive management traffic.

Certificate Prerequisites

If your ASA device does not have a compatible certificate, onboarding the device may fail. Make sure that these requirements are met:

- The device must use TLS version 1.0 or later.
- The certificate presented by the device must not be expired, and its issuance date must be in the past. This means the certificate is already valid and not scheduled to become valid later.
- The certificate must be a SHA-256 certificate. SHA-1 certificates are not accepted.
- One of the following conditions must be met:
  - The device uses a self-signed certificate, and it is the same as the most recent one trusted by an authorized user.
  - The device uses a certificate signed by a trusted Certificate Authority (CA) and provides a certificate chain that links the presented leaf certificate to the relevant CA.

Open SSL Cipher Prerequisites

If the device does not have a compatible SSL cipher suite, it cannot successfully communicate to the Secure Device Connector (SDC). Use any of these cipher suites:

- ECDHE-RSA-AES128-GCM-SHA256
- ECDHE-ECDSA-AES128-GCM-SHA256
- ECDHE-RSA-AES256-GCM-SHA384
- ECDHE-ECDSA-AES256-GCM-SHA384
- DHE-RSA-AES128-GCM-SHA256
- ECDHE-RSA-AES128-SHA256
- DHE-RSA-AES128-SHA256
- ECDHE-RSA-AES256-SHA384
- DHE-RSA-AES256-SHA384
- ECDHE-RSA-AES256-SHA256
- DHE-RSA-AES256-SHA256

Procedure

Step 1 Choose Security Devices.

Step 2 Click the **Onboard device or service** ( ) icon.

Step 3 Click the **ASA** tile.

Step 4 In the **Locate Device** step, perform these actions:

a. Enter a name for the device.

b. Enter the location of the device or service (IP address, FQDN, or URL). The default port is 443.

c. Click **Next**.

Step 5 In the **Credentials** step, enter the username and password of the ASA administrator, or similar highest-privilege ASA user, that Security Cloud Control Firewall Management will use to connect to the device and click **Next**.

Step 6 After labeling your device or service, you can view it in the **Security Devices** list.

Note
Analyzing the configuration may take some time, depending on its size and the number of devices or services.

The ASA device is successfully onboarded and appears in the **Security Devices** list, where you can manage and monitor its configuration.

Onboard a high availability pair of ASA devices to Security Cloud Control Firewall Management

A high availability ASA device onboarding process is a network management approach that

- requires onboarding only the primary ASA to Security Cloud Control Firewall Management
- uses the failover link to manage the secondary ASA automatically, and
- eliminates the need to onboard the secondary device separately.

Additional onboarding information

For more information about onboarding ASA devices to Security Cloud Control Firewall Management, refer to Onboard ASA device to Security Cloud Control Firewall Management, on page 215.

Secure Firewall ASA multi-context mode onboarding to Security Cloud Control Firewall Management

ASA multi-context mode onboarding is a process that

- partitions a single ASA into multiple logical devices known as contexts
- onboards each security context and admin context as a separate ASA in Security Cloud Control Firewall Management, and
- manages each context as if it were a separate ASA device.

Multi-context mode configuration types

The three types of configurations used in an ASA configured in multi-context mode are:

- Security context
- Admin context
- System configuration

Security contexts:

Each security context acts as an independent device, with its own security policy, interfaces, and administrators. Multiple security contexts are similar to having multiple standalone devices. A security context is not a virtual ASA in the sense of a virtual machine image installed in a private cloud infrastructure. A security context is configured on an ASA that is installed on a hardware appliance. Each context is configured on a physical interface of that appliance.

For more information about multi-context mode, refer to ASA CLI and ASDM configuration guides.

Security Cloud Control Firewall Management onboards each security context as a separate ASA and manages it as if it were a separate ASA.

Admin contexts:

The admin context is similar to a security context, except that when a user logs in to the admin context, the user has system administrator rights and can access the system and all other contexts. The admin context is not restricted in any way and can be used as a regular context. However, because logging into the admin context grants administrator privileges over all contexts, access to the admin context should be restricted to authorized users.

Security Cloud Control Firewall Management onboards each admin context as a separate ASA and manages it as if it were a separate ASA. Security Cloud Control Firewall Management also uses the admin context when upgrading ASA and ASDM software on the appliance.

System configuration:

The system administrator adds and manages contexts by configuring each context configuration location, allocated interfaces, and setting other context operating parameters within the system configuration, which, like a single mode configuration, is the startup configuration. The system configuration identifies basic settings for the ASA. The system configuration does not include any network interfaces or network settings for itself. When the system needs to access network resources, such as downloading the contexts from the server, it uses one of the contexts designated as the admin context.

Security Cloud Control Firewall Management does not onboard the system configuration.

Onboard prerequisites for security and admin contexts:

Before you onboard security or admin contexts, check the prerequisites in Onboard ASA device to Security Cloud Control Firewall Management, on page 215.

To learn which Cisco appliances support ASAs in multi-context mode, refer to the "Multiple Context Mode" chapter in the *CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide* for your ASA software version.

An ASA running as a single context firewall, or as the admin context of a multiple-context firewall, can use different port numbers for ASDM and Security Cloud Control Firewall Management access. ASA security contexts use a fixed port (port 443) for ASDM and Security Cloud Control Firewall Management access.

Onboard ASA security and admin contexts:

To onboard a security context or admin context, follow the instructions in Onboard ASA device to Security Cloud Control Firewall Management, on page 215 or Onboard multiple ASAs to Security Cloud Control Firewall Management, on page 219.

Upgrade security contexts:

Security Cloud Control Firewall Management treats each security and admin context of a multiple-context ASA as a separate ASA and each is onboarded separately. However, all security and admin contexts of a multiple-context ASA run the same version of ASA software installed on the appliance.

Onboard multiple ASAs to Security Cloud Control Firewall Management

Security Cloud Control Firewall Management allows you to bulk onboard ASA devices by providing the necessary information for all the ASA devices in a .CSV file.

As the ASA devices are being onboarded, you can use the filter pane to show which onboarding attempts are queued, loading, complete, or have failed.

Before you begin

- Prepare a .CSV file with the connection information for the ASA devices you want to onboard. Add the information about each ASA on a separate line. To include a comment, add a # at the beginning of the line.
  - ASA location (either IP address or FQDN)
  - ASA administrator username
  - ASA administrator password
  - (Optional) Device name for Security Cloud Control Firewall Management
  - (Optional) device labels for Security Cloud Control Firewall Management
  - To add one label, add the label name to the last CSV field.
  - To add more than one label to a device, surround the values with quotation marks. For example, `alpha,beta,gamma`.

- To add a category and choice label, separate the two values with a colon (:). For example, `Rack:50`.

Here is a sample configuration file.

```
#Location,Username,Password,DeviceName,SDCName,DeviceLabel
192.168.3.2,admin,CDO123!,ASA3,sdc1,"HA-1,Rack:50"
192.168.4.2,admin,CDO123!,ASA4,sdc1,"HA-1,Rack:50"
ASA2.example.com,admin,CDO123!,ASA2,none,Rack:51
asav.virtual.io,admin,CDO123!,ASA-virtual,sdc3,Test
```

Caution Security Cloud Control Firewall Management does not validate any of the data in the .CSV file. You need to ensure the accuracy of the entries.

Follow these steps to onboard multiple ASAs to Security Cloud Control Firewall Management:

Procedure

Step 1 Choose Security Devices.

Step 2 Click the plus button to onboard an ASA.

Step 3 On the Onboarding page, click the **Multiple ASAs** tile.

Step 4 Click **Browse** to locate the .CSV file containing your ASA entries. The devices you specify appear in the ASA Bulk Onboarding table as queued and are ready for onboarding.

Caution
Stay on the ASA Bulk Onboarding page until the onboarding process is complete. If you leave the page, the onboarding process stops.

Step 5 Click **Start**.

The status column in the ASA Bulk Onboarding table shows the progress of onboarding. When onboarding finishes, the status displays "Complete."

To pause bulk onboarding and resume later, refer to Pause and resume onboarding multiple ASA devices, on page 220.

The ASA devices are successfully onboarded to Security Cloud Control Firewall Management and appear with "Complete" status in the ASA Bulk Onboarding table.

Pause and resume onboarding multiple ASA devices

This task allows you to control the bulk onboarding process by pausing it when needed and resuming it later without losing progress on devices that have already been processed.

During bulk onboarding of multiple ASA devices, you may need to temporarily stop the process and resume it later. The system maintains the state of already onboarded devices and continues with the remaining queued devices when resumed.

Procedure

Step 1 To pause the onboarding process, click **Pause**.

Security Cloud Control Firewall Management completes onboarding any device it has started.

Step 2 To resume bulk onboarding, click **Start**.

Security Cloud Control Firewall Management will begin onboarding the next queued device.

The bulk onboarding process can be paused and resumed as needed. If you leave the page after pausing, you must return and restart the process. Security Cloud Control Firewall Management identifies already onboarded devices, flags duplicates from this new attempt, and quickly starts onboarding the remaining queued devices.

Create and import an ASA model to Security Cloud Control Firewall Management

This task allows you to create and import an ASA model to Security Cloud Control Firewall Management, enabling configuration management and offline policy setup for ASA devices.

Use this process when you need to download an ASA device configuration file from the management interface to your local computer for further configuration management tasks.

Procedure

Step 1 Choose Security Devices.

Step 2 Click the **Devices** tab.

Step 3 Click the **ASA** tab.

Step 4 Select an ASA device. In the **Management** section, click **Configuration**.

Step 5 To download the device configuration to your local computer, click **Download**.

The ASA device configuration file is downloaded to your local computer and can be used for creating and importing an ASA model with device identity, labels, and offline policy configuration.

Import ASA configuration

Import your Cisco ASA configuration file to enable offline management of ASA security devices through the platform interface.

Use this procedure when you need to onboard ASA security devices for offline management by uploading existing configuration files to the platform.

Before you begin

The ASA running configuration file you are onboarding must be less than 4.5 MB. Confirm the size of the configuration file before you onboard it.

Follow these steps to import ASA configuration:

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose Security Devices.

Step 3 Click the add button () to import the configuration file.

Step 4 Click **Import configuration for offline management**.

Step 5 Select the **Device Type** as **ASA**.

Step 6 Click **Browse**, and select the configuration file in text format to upload.

Step 7 After labeling your model device, you can view it in the **Security Devices** list.

Note
The configuration may take some time to be analyzed, depending on its size and the number of other devices or services.

Configuration import for offline device management

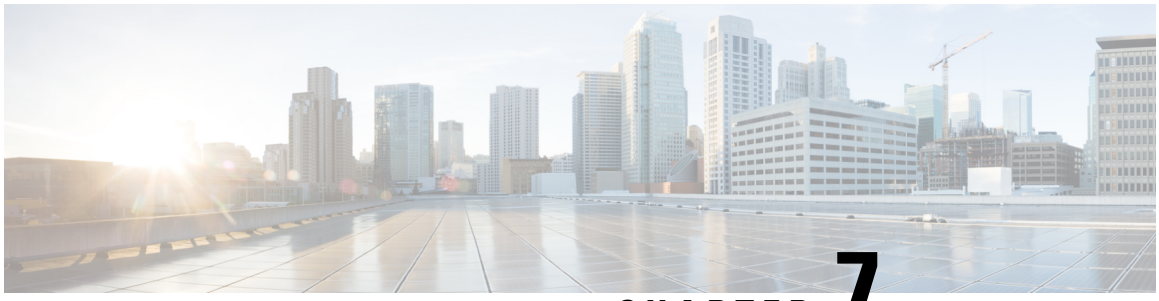
Configuration import for offline device management is a feature that

- allows you to review, analyze, and optimize device settings without requiring access to a live device in your network
- creates models that represent copies of device configurations for policy review, planning, and reuse, and
- processes uploaded configuration files so they appear in the **Security Devices** list for labeling, reviewing, and managing like other supported devices.

Supported device types

You can import the configurations for these device types into Security Cloud Control Firewall Management:

- Adaptive Security Appliance (ASA): You can upload an ASA configuration file to create an ASA model for offline review and management. For more information, refer to Create and Import an ASA Model.
- Cisco IOS devices such as Aggregation Services Routers (ASRs) and Integrated Services Routers (ISRs): You can upload a text-based running configuration file to create an IOS model for offline analysis and reuse.



CHAPTER 7

Onboard an On-Premises Firewall Management Center

This chapter provides steps to onboard an On-Premises Firewall Management Center and manage associated Threat Defense devices.

- Onboard an On-Premises Firewall Management Center to Security Cloud Control Firewall Management, on page 223
- Remove an On-Premises Firewall Management Center from Security Cloud Control, on page 226

Onboard an On-Premises Firewall Management Center to Security Cloud Control Firewall Management

Security Cloud Control Firewall Management provides two methods to onboard on-premises Firewall Management Centers.

- Use on-premises Firewall Management Center credentials with SDC is supported but intended only for very rare use cases. Onboarding with SDC limits access to many cloud assist features available with direct onboarding. Choose SDC if direct onboarding is not possible.

Security Cloud Control complements FMC by enabling:

- Consistent policy enforcement through shared object management with FMCs.
- Zero-touch provisioning of Firewall Threat Defense devices. For more information, refer to Onboard a Device to On-Premises Firewall Management Center with Zero-Touch Provisioning.
- Centralized visibility and management of security devices. For more information, refer to Device and Service Management.
- Integration with cloud Cisco Secure Dynamic Attributes Connector (CSDC) and Cloud-Delivered Firewall Management Center. For more information, refer to Cisco Secure Dynamic Attributes Connector.

Limitations and Guidelines

- Onboarding an on-premises Firewall Management Center also onboards all devices registered to it. Disabled or unreachable devices may appear in the **Security Devices** page in Security Cloud Control but cannot be managed or queried.

- Onboarding does **not** cascade policies from on-premises Firewall Management Center to Security Cloud Control or Cloud-Delivered Firewall Management Center. To migrate Firewall Threat Defense devices to Cloud-Delivered Firewall Management Center, use the built-in **Migrate FTD to** Cloud-Delivered Firewall Management Center feature. For more information, refer to Migrate Threat Defense to Cloud-delivered Firewall Management Center.
- We recommend creating a dedicated user on the on-premises Firewall Management Center with administrator-level permissions specifically for Security Cloud Control communication. If you log in to on-premises Firewall Management Center with the same credentials during onboarding, the process will fail. This recommendation applies only to credentials-based onboarding, not to direct integration.
- For this dedicated user, set the **Maximum Number of Failed Logins** to zero.
- For on-premises Firewall Management Centers version 7.4 or later, if a switchover causes a loss of cloud connectivity, disable and then re-enable **SecureX**, **Security Cloud Control**, or **Cisco Security Cloud** (depending on your version) to restore the connection.

Onboard an On-Premises Firewall Management Center to Security Cloud Control with Credentials

To onboard an on-premises Firewall Management Center to Security Cloud Control with credentials, follow this procedure:

Before you begin

These prerequisites must be met:

- **For Cloud Secure Device Connector (SDC)**: Allow inbound traffic on port 443 of the on-premises Firewall Management Center.

  The SDC reaches the on-premises Firewall Management Center by allowing inbound traffic on port 443.



  Both the Security Cloud Control and the SDC are hosted in the cloud.

- **For On-Premises Secure Device Connector (SDC)**: Allow outbound connectivity on port 443 of the SDC.

  The SDC requires connectivity to the Security Cloud Control, making it imperative to permit outbound traffic from the SDC to the Security Cloud Control. No additional port configuration is required on on-premises Firewall Management Center.



Procedure

Step 1 Choose **Tools & Services** > **Firewall Management Center**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Click  to onboard an on-premises Firewall Management Center.

Step 4 Click **Firewall Management Center**.

Step 5 Select the **Use Credentials** card.

Step 6 Enter the device name and location and click **Next**.

Step 7 Enter the **Username** and **Password** of the account credentials you want to use to access the on-premises Firewall Management Center. Click **Next**.

Step 8 After you onboard the device, you can add labels to your on-premises Firewall Management Center, or you can click **Go to Services** to view the page of onboarded devices. If the device is healthy, the FMC displays a **Synced** status.

Note
Devices managed by on-premises Firewall Management Center are automatically named as "<*fmcname*>_<*manageddevicename*>."

Redirect Security Cloud Control to an On-Premises Firewall Management Center

After you onboard an on-premises Firewall Management Center to Security Cloud Control, update the management interface's hostname in the on-premises Firewall Management Center UI so that it contains the FQDN. If you do not update the management interface's hostname, you cannot cross-launch from Security Cloud Control.

Use this procedure to update the management interface hostname and redirect from Security Cloud Control to on-premises Firewall Management Center:

Procedure

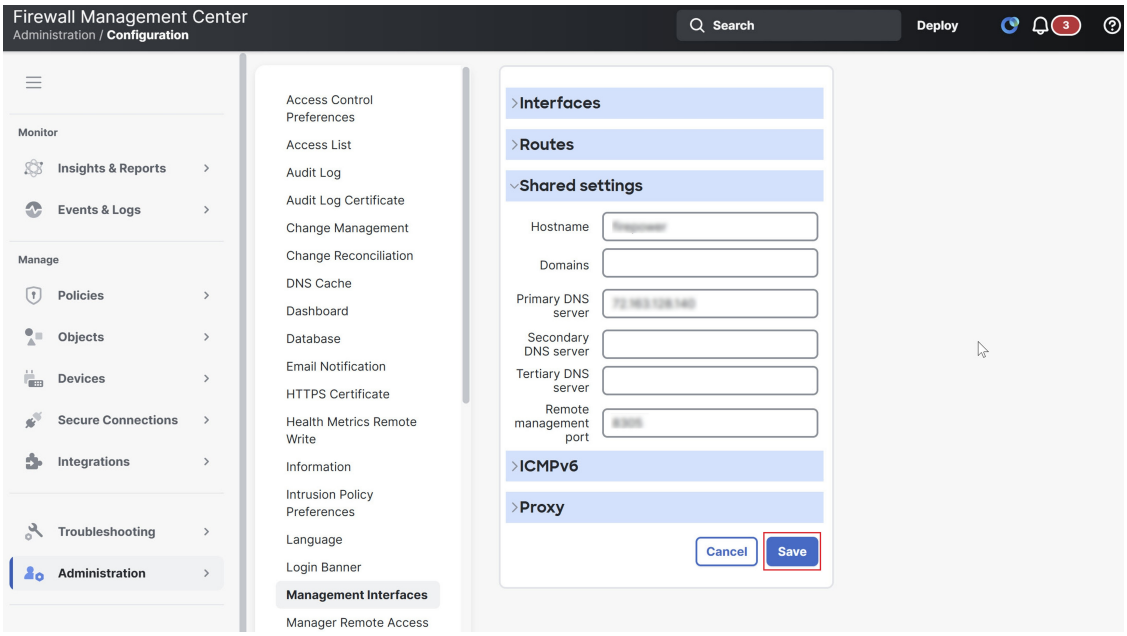
Step 1 Log in to the On-Premises Firewall Management Center UI.

Step 2 Choose **Administration** > **Configuration**.

Step 3 Click the **Management Interfaces** tab.

Step 4 Under **Shared Settings**, locate the **Hostname** field and enter the Firewall Management Center's FQDN.

Step 5 Click **Save**.



Note
You may have to log out of Security Cloud Control before you can click **Manage Devices in Firepower Management Center** and cross-launch to the on-premises Firewall Management Center UI.

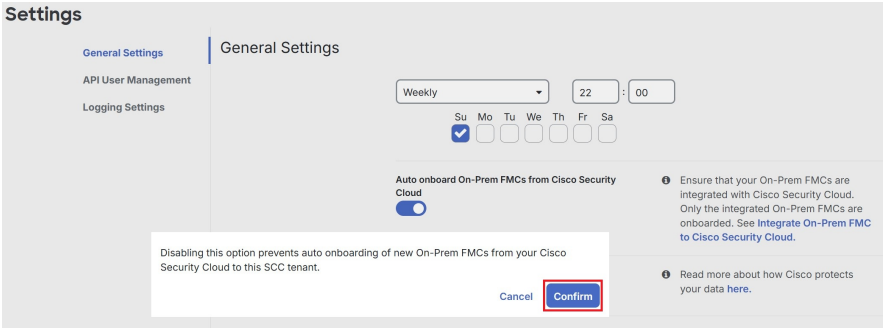
Remove an On-Premises Firewall Management Center from Security Cloud Control

If you remove an on-premises Firewall Management Center from Security Cloud Control, all devices managed by that on-premises Firewall Management Center will also be removed.

Before you begin

To remove one or more on-premises Firewall Management Centers that were onboarded using auto-onboarding, first disable the auto-onboarding option.

1. Choose **Settings** > **General Settings**.
2. Choose **Administration** > **General Settings**.
3. In the **Tenant Settings** section, disable **Auto onboard On-Prem FMCs integrated to Cisco Security Cloud**.



Procedure

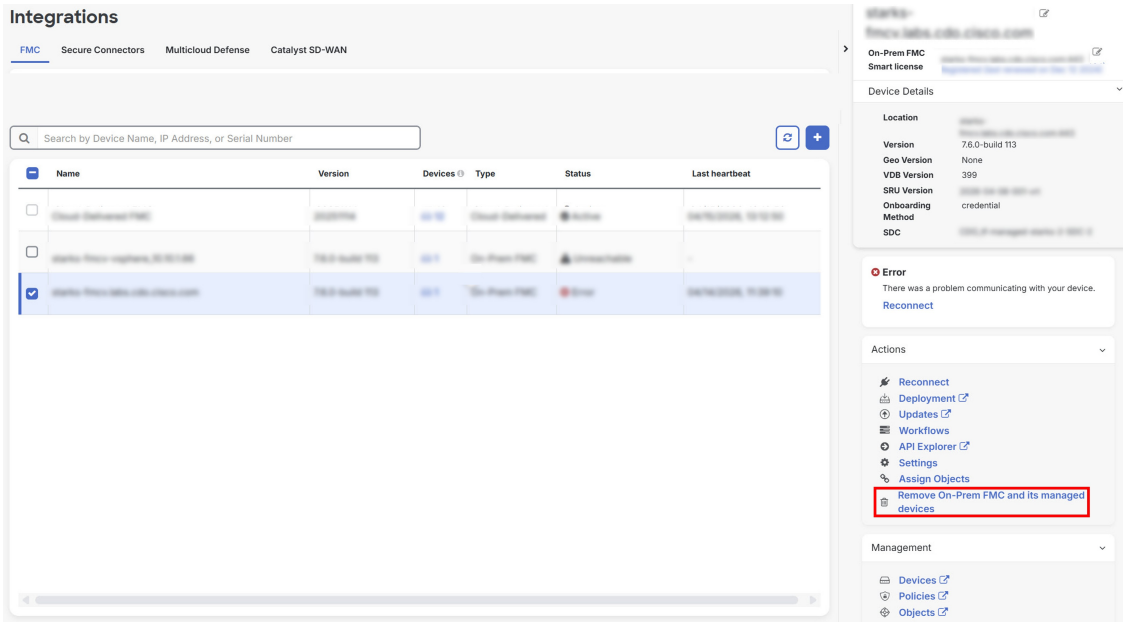
Step 1 Choose **Tools & Services** > **Firewall Management Center**.

Step 2 Choose **Administration** > **Integrations** > **Firewall Management Center**.

Step 3 Click the **FMC** tab.

Step 4 Choose the on-premises Firewall Management Center you want to remove.

Step 5 In the **Device Actions** pane, click **Remove On-Prem FMC and its managed devices**.



Step 6 Click **OK** to confirm that you want to remove on-premises Firewall Management Center and its managed devices from your tenant.

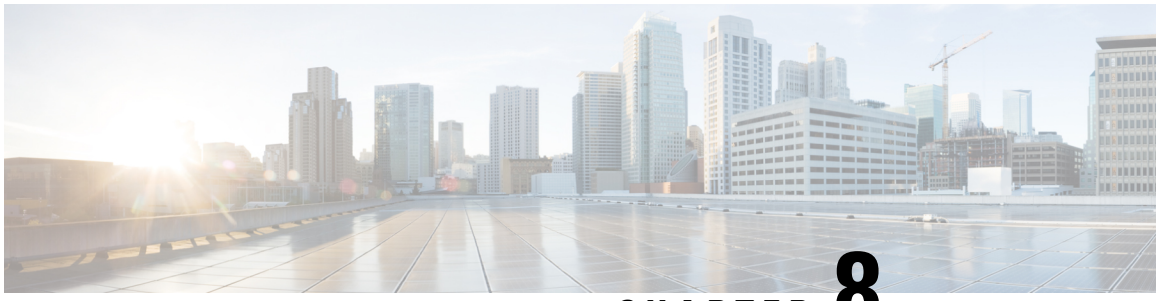
Step 7 Refresh your browser to see an updated list of devices.



PART III

Configure Devices And Services

- Introduction to objects, on page 231
- Configure Secure Firewall ASA Devices, on page 315
- Configure Cloud-Delivered Firewall Management Center-Managed Secure Firewall Threat Defense, on page 397
- Configure On-Premises Firewall Management Center-Managed Threat Defense Devices, on page 403



CHAPTER 8

Introduction to objects

An object is a reusable container of information that you can use in one or more security policies. Objects help you maintain policy consistency because you can define a value once, use it in multiple policies, and update every policy that uses the object by changing the object.

When you onboard a device, Security Cloud Control Firewall Management recognizes all the objects used by that device, saves them, and lists them on the **Objects** page. From the **Objects** page, you can edit existing objects and create new ones to use in your security policies.

Security Cloud Control Firewall Management calls an object used on multiple devices a **shared object** and identifies them in the **Objects** page with this badge .

You can use Security Cloud Control Firewall Management to manage objects in these ways:

- Search for and filter all your objects based on a variety of criteria.
- Find duplicate, unused, and inconsistent objects, and then consolidate, delete, resolve, ignore, or unignore object issues.
- Find and delete unassociated objects if they are not needed.
- Discover objects that are shared across devices.
- Evaluate which policies and devices are affected before you commit an object change.
- Compare a set of objects and their relationships with different policies and devices.
- Capture objects that are in use after a device is onboarded to Security Cloud Control Firewall Management.

Sometimes a shared object develops some "issue" and is no longer perfectly shared across multiple policies or devices:

- **Duplicate objects**: Two or more objects on the same device have different names but the same values. These objects usually serve similar purposes and are used by different policies. Duplicate objects are identified by this issue icon:
- **Inconsistent objects**: Two or more devices have objects with the same name but different values. This issue can occur when objects start with the same name and content but later diverge. Inconsistent objects are identified by this issue icon:
- **Unused objects**: An object exists in a device configuration but is not referenced by another object, an access list, or a NAT rule. Unused objects are identified by this issue icon:

You can also create objects for immediate use in rules or policies. You can create an object that is unassociated with any rule or policy. When you use that unassociated object in a rule or policy, Security Cloud Control Firewall Management creates a copy of it and uses the copy.

You can view the objects managed by Security Cloud Control Firewall Management by navigating to the **Objects** menu or by viewing them in the details of a network policy.

If you have issues with creating, editing, or reading objects from an onboarded device, see Troubleshoot Security Cloud Control, on page 829 for more information.

- Introduction to objects, on page 232
- Network objects, on page 242
- URL objects, on page 260
- Geolocation objects, on page 262
- DNS group objects, on page 264
- Certificate objects, on page 266
- ASA trustpoint objects, on page 271
- IPsec proposal and IKE policy objects, on page 283
- Global IKE policies, on page 285
- Remote access VPN objects, on page 288
- Security zone object, on page 296
- Service objects, on page 298
- Security group tag group, on page 302
- Syslog server objects, on page 306
- ASA time range objects, on page 308
- Troubleshooting Objects, on page 309

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Supported object types

The object types that you can create and manage depend on the managed device type.

Common object types

Table 21: Common Objects

Object Type	Description
Network	Network groups and network objects (collectively referred to as network objects) define the addresses of hosts or networks.
URL	Use URL objects and groups (collectively referred to as URL objects) to define the URL or IP addresses of web requests. You can use these objects to implement manual URL filtering in access control policies or blocking in Security Intelligence policies.

ASA object types

Table 22: Adaptive Security Appliance (ASA) Object Types

Object	Description
Network	Defines host or network addresses. This category includes network objects and network groups.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.
Time Range	Defines a start time, an end time, and optional recurring entries for time-based access to features or assets.
Trustpoints	Manages and tracks digital certificates in ASA.

FDM-managed device object types

Table 23: FDM-Managed Device Object Types

Object	Description
AnyConnect Client Profile	Represents files used in configurations, typically for remote access VPN policies. These objects can contain AnyConnect Client Profile and AnyConnect Client Image files.
Certificate Filter	Provides digital identification for authentication. Certificates are used for SSL, TLS, and DTLS connections, such as HTTPS and LDAPS.
DNS Group	Defines DNS servers that resolve fully qualified domain names (FQDNs), such as www.example.com, to IP addresses. You can configure different DNS group objects for management and data interfaces.
Geolocation	Defines countries and continents that host the source or destination of traffic. You can use geolocation objects in policies instead of IP addresses.
IKEv1 Policy	Contains the parameters required for IKEv1 policies when defining VPN connections.
IKEv2 Policy	Contains the parameters required for IKEv2 policies when defining VPN connections.
IKEv1 IPSEC Proposal	IPsec Proposal objects configure the IPsec proposal used during IKE Phase 1 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.

Object	Description
IKEv2 IPSEC Proposal	IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.
Network	Defines host or network addresses. This category includes network objects and network groups.
Security Zone	Groups interfaces into network segments that help classify and manage traffic.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.
SGT Group	Identifies source or destination addresses based on a security group tag (SGT) assigned by Cisco ISE.
Syslog Server	Identifies a server that can receive connection-oriented or diagnostic syslog messages.
URL	Defines URLs or IP addresses for web requests. URL objects and URL groups can be used for manual URL filtering in access control policies or blocking in Security Intelligence policies.

On-Premises Firewall Management Center object types

Table 24: On-Premises Secure Firewall Management Center Object Types

Object	Description
Network	Defines host or network addresses. This category includes network objects and network groups.
Service	Defines protocols or ports that are part of the TCP/IP protocol suite. This category includes service objects, service groups, and port groups.

Shared objects

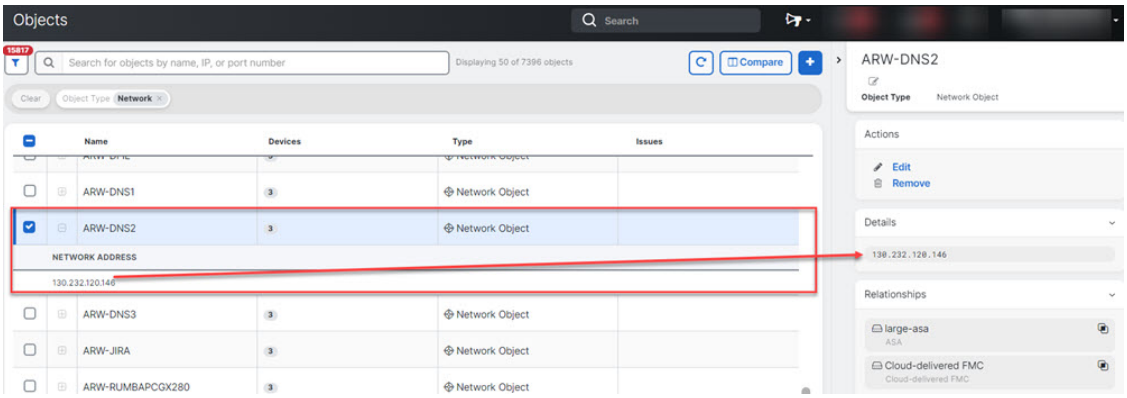
A shared object is an object on multiple devices that has the same name and the same contents. Shared objects help you maintain policies because one object change affects every policy that uses that shared object.

Shared objects are identified by this icon



on the **Objects** page. Shared objects make it easy to maintain policies because you can modify an object in one place and that change affects all the other policies that use that object. Without shared objects, you would need to modify all the policies individually that require the same change.

When looking at a shared object, Security Cloud Control shows you the contents of the object in the object table. Shared objects have exactly the same contents. Security Cloud Control shows you a combined or "flattened" view of the elements of the object in the details pane. Notice that in the details pane, the network elements are flattened into a simple list and not directly associated with a named object.



Object Overrides

An object override lets you customize a shared object for specific devices. When a device has an override, Security Cloud Control Firewall Management uses the override value for that device instead of the object's default value.

Overrides allow you to maintain a single shared policy across devices while tailoring individual object values where needed.

Use overrides when you want to maintain one shared policy across devices but need specific devices to use different object values. For example, a shared print-server object can use the default value 10.1.1.100 for most offices, while Office B uses an override value of 10.2.1.100.

Overrides on network object groups

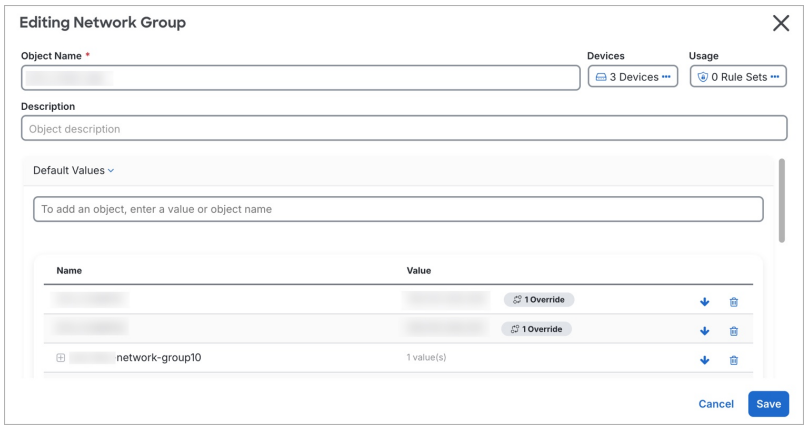
For network object groups, overrides fully replace the default values for the devices that are assigned to the override. A device with an override receives only the override values, not the default values.

This replacement behavior has these effects:

- Changes to default values affect only devices without overrides.
- Changes to an override affect only the devices assigned to that override.
- If a device needs the default values plus a local value, add all required values to the override.

For example, a shared dns-servers network group contains default values primary-dns (10.0.1.53) and secondary-dns (10.0.2.53) for Branch A, Branch B, and Branch C. Branch C also needs local-dns-cache (10.30.1.53). Because a network group override replaces the defaults, the Branch C override must contain primary-dns, secondary-dns, and local-dns-cache.

If you later add a default value, such as tertiary-dns, Branch A and Branch B receive the new default value automatically. Branch C does not receive it until you add tertiary-dns to the Branch C override.



Unassociated objects

An unassociated object is not associated with any rule or policy. When you use an unassociated object in a rule or policy, Security Cloud Control Firewall Management creates and uses a copy of that object. The original unassociated object remains available until a nightly maintenance job deletes it or you delete it manually.

Security Cloud Control Firewall Management keeps unassociated objects as a copy so that configuration data is not lost if the related rule or policy is deleted accidentally.

To view unassociated objects, choose **Objects** > , and check **Unassociated**.

Compare objects

Use object comparison to review up to three objects side by side and inspect their details and relationships.

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Filter the objects on the page to find the objects you want to compare.

Step 3 Click the **Compare** button Compare.

Step 4 Select up to three objects.

Step 5 Review the objects side-by-side at the bottom of the screen.

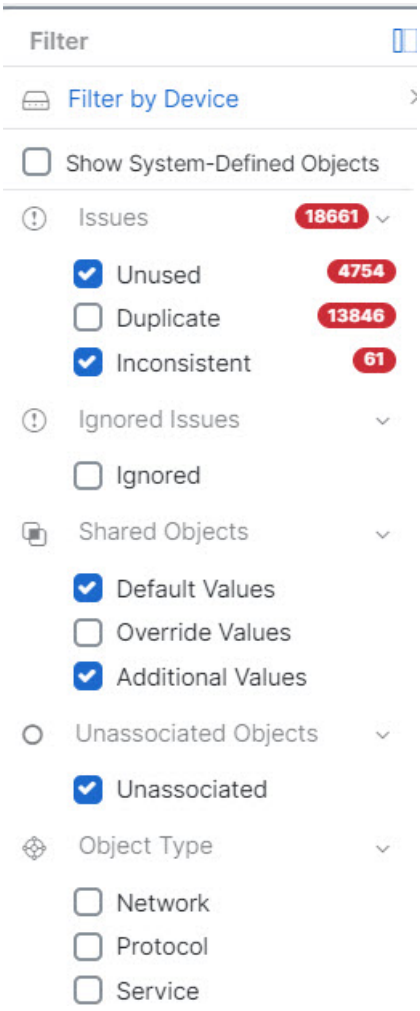
Step 6 (Optional) In **Relationships**, select a device name, and then select **View Configuration** to view the device configuration with the object entry highlighted.

Object filters

Use filters on the **Objects** page to find objects by device, issue, shared state, association state, object type, or search value. You can also include or exclude system-defined objects.

The object type filter lets you filter by object types such as network object, network group, URL object, URL group, service object, and service group. The shared objects filter lets you filter objects that have default values, override values, or additional values.

You can combine device and object filters to create focused search strategies. For example, you can search for objects that match this logic: **Issues** is **Unused** OR **Inconsistent**, AND **Shared Objects** has **Default Values** OR **Additional Values**, AND **Unassociated Objects** is selected.



To filter, click in the left-hand pane of the Objects tab:

- **Filter by Device**: Shows objects found on selected devices.
- **Show System-Defined Objects**: Includes predefined system objects in search and filter results. System objects cannot be edited or deleted. Some devices come with predefined objects for common services. These system objects are convenient because they are already made for you and you can use them in your rules and policies. There can be many system objects in the objects table. System objects cannot be edited or deleted.
- **Issues**: Shows unused, duplicate, or inconsistent objects. If you select more than one issue, objects in any selected issue category are included.

- **Ignored Issues**: Shows objects whose issues were ignored by an administrator.
- **Shared Objects**: Shows shared objects. You can filter by default values, override values, additional values, or a combination.
- **Unassociated Objects**: Shows objects that are not associated with any rule or policy.
- **Object Type**: Shows selected object types, such as network objects, network groups, URL objects, URL groups, service objects, and service groups.

Within a main filter, subfilters can further narrow the results by object type, such as Network, Service, or Protocol. Filters across categories combine with an AND relationship. Multiple selections within a category can combine with an OR relationship.

For example, a filter set can search for objects that match this logic: objects on selected devices AND inconsistent objects AND network objects or service objects AND object names that contain **group**.

Configure object filters

You can filter on as few or as many criteria as you want. The more categories you filter by, the fewer results you should expect.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Open the filter panel by clicking the filter icon at the top of the page. Uncheck any filters that have been checked to make sure no objects are inadvertently filtered out.

Step 3 If you want to restrict your results to those found on particular devices:

a. Click **Filter By Device**.

b. Search all the devices or click a device tab to search for only devices of a certain kind.

c. Check the device you want to include in your filter criteria.

d. Click **OK**.

Step 4 Check **Show System Objects** to include system objects in your search results. Uncheck **Show System Objects** to exclude system objects from your search results.

Step 5 Check the object **Issues** you want to filter. If you check more than one issue, objects in any of the categories you check are included in your filter results.

Step 6 Check **Ignored** issues if you want to see the object that had issues but was ignored by the administrator.

Step 7 Check the required filter in **Shared Objects** if you are filtering for objects shared between two or more devices.

- **Default Values**: Filters objects having only the default values.
- **Override Values**: Filters objects having overridden values.
- **Additional Values**: Filters objects having additional values.

Step 8 Check **Unassociated** if you are filtering for objects that are not part of any rule or policy.

Step 9 Check the **Object Types** you want to filter.

Step 10 You can also add an object name, IP address, or port number to the Objects search field to find objects with your search criteria among the filtered results.

Exclude device filters when you need full relationships

When you filter by device, Security Cloud Control Firewall Management shows objects on that device but does not show the object's relationships to all other devices.

For example, if ObjectA is shared between ASA1 and ASA2, and you filter for shared objects on ASA1, Security Cloud Control Firewall Management shows `ObjectA`, but the **Relationships** pane shows only that ObjectA is on ASA1.

To view every device and policy relationship for an object, do not specify a device in the filter criteria. Filter by other criteria, select the object, and review the **Relationships** pane.

Unignore objects

Unignore Objects refers to the process of reversing the action of ignoring certain objects that have been marked as unused, duplicate, or inconsistent. Ignoring objects is a way to temporarily leave unresolved issues with these objects when there are valid reasons. However, if you later decide to address these ignored objects, you can unignore them to bring them back into view and take action.

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 In the **Object** table, select the object you want to unignore. You can unignore one object at a time.

Step 3 Click **Unignore** in the details pane.

Step 4 Confirm your request. Now, when you filter your objects by issue, you should find the object that was previously ignored.

Delete objects

You can delete a single object or mulitple objects.

Delete a single object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to delete by using object filters and the search field, and select it.

Step 3 Review the **Relationships** pane. If the object is used in a policy or in an object group, you cannot delete the object until you remove it from that policy or group.

Step 4 In the **Actions** pane, click the **Remove** icon .

Step 5 Confirm that you want to delete the object by clicking **OK**.

Step 6 Review and deploy the changes you made, or wait and deploy multiple changes at once.

Delete a group of unused objects

As you onboard devices and start resolving object issues, you find many unused objects. You can delete up to 50 unused objects at a time.

Procedure

Step 1 Use the **Issues** filter to find **unused** objects. You can also use the Device filter to find objects that are not associated with a device by selecting **No Device**.

Step 2 Check the **Select all** checkbox in the object table header to select all the objects found by the filter that appear in the object table; or, check individual checkboxes for individual objects you want to delete.

Step 3 In the **Actions** pane, click the **Remove** icon .

Step 4 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Network objects

A network object can contain a host name, a network IP address, a range of IP addresses, a fully qualified domain name (FQDN), or a subnetwork expressed in CIDR notation. **Network groups** are collections of network objects and other individual addresses or subnetworks that you add to the group. Network objects and network groups are used in access rules, network policies, and NAT rules.

Not all platforms support network objects, such as Cisco Meraki and Multicloud Defense; when you share dynamic objects, Security Cloud Control Firewall Management automatically translates the appropriate information from the originating platform or device into a set of usable information that Security Cloud Control Firewall Management can use.

Table 25: Permitted Values of Network Objects

Device type	IPv4 / IPv6	Single Address	Range of addresses	Fully Qualified Domain Name	Subnet using CIDR Notation
ASA	IPv4 and IPv6	Yes	Yes	Yes	Yes
FTD	IPv4 and IPv6	Yes	Yes	Yes	Yes
Multicloud Defense	IPv4 and IPv6	Yes	Yes	Yes	Yes

Table 26: Permitted Contents of a Network Group

Device type	IP Value	Network Object	Network Groups
ASA	Yes	Yes	Yes
FTD	No	Yes	Yes
Multicloud Defense	Yes	Yes	Yes

Reuse network objects across products

If you have a Security Cloud Control tenant with a Cloud-Delivered Firewall Management Center and one or more on-premises Firewall Management Centers onboarded to your tenant:

- When you create a Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, ASA, or Meraki network object or group, a copy of the object is also added to the objects list on the **Objects** page used when configuring Cloud-Delivered Firewall Management Center, and vice versa.
- When you create a Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, or ASA network object or group, an entry is created in the **Devices with Pending Changes** page for each On-Premises Firewall Management Center for which **Discover & Manage Network Objects** is enabled. From this list, you can choose and deploy the object to the on-premises Firewall Management Center on which you want to use the object and discard the ones that you do not want. Navigate **Tools & Services** > **Firewall Management Center**, **Administration** > **Firewall Management Center** select the on-premises Firewall Management Center, and click **Objects** to see your objects in the On-Premises Firewall Management Center user interface and assign them to policies.

Changes you make to network objects or groups on either page apply to the object or group instance on both pages. Deleting an object from one page also deletes the corresponding copy of the object from the other page.

The following exceptions apply:

- If a network object of the same name already exists for Cloud-Delivered Firewall Management Center, the new Secure Firewall Threat Defense, FDM-managed Firewall Threat Defense, ASA, or Meraki network object will not be replicated on the **Objects** page of Security Cloud Control.
- Network objects and groups in onboarded Firewall Threat Defense devices that are managed by on-premises Secure Firewall Management Center are not replicated and cannot be used in Cloud-Delivered Firewall Management Center.

  Note that for on-premises Secure Firewall Management Center instances that have been *migrated* to Cloud-Delivered Firewall Management Center, network objects and groups *are* replicated to the Security Cloud Control objects page if they are used in policies that were deployed to FTD devices.
- Sharing Network Objects between Security Cloud Control and Cloud-Delivered Firewall Management Center is automatically enabled on new tenants but must be requested for existing tenants. If your network objects are not being shared with Cloud-Delivered Firewall Management Center, contact TAC to have the features enabled on your tenant.
- Sharing network objects between Security Cloud Control and On-Premises Firewall Management Center is not automatically enabled on Security Cloud Control for new on-premises Firewall Management Centers onboarded to Security Cloud Control. If your network objects are not being shared with On-Premises Firewall Management Center, ensure the **Discover & Manage Network Objects** toggle button is enabled for the on-premises Firewall Management Center in **Settings** or contact TAC to have the features enabled on your tenant.

Viewing network objects

Network objects that you create in Security Cloud Control Firewall Management, and network objects that Security Cloud Control Firewall Management recognizes in onboarded device configurations, appear on the **Objects** page. They are labeled with their object type. This allows you to filter by object type to quickly find the object you are looking for.

When you select a network object, the **Details** pane shows the object values. The **Relationships** pane shows whether the object is used in a policy and which device stores the object.

When you select a network group, Security Cloud Control Firewall Management shows the contents of the group as the combined values from the network objects in that group.

Create or Edit ASA Network Objects and Network Groups

An ASA network object can contain a hostname, an IP address, or a subnet address expressed in CIDR notation. **Network groups** are conglomerates of network objects, network groups, and IP addresses that are used in access rules, network policies, and NAT rules. You can create, read, update, and delete network objects and network groups using Security Cloud Control.

Table 27: Permitted Values of ASA Network Objects and Groups

Device type	IPv4 / IPv6	Single Address	Range of addresses	Partially Qualified Domain Name (PQDN)	Subnet using CIDR Notation
ASA	IPv4 / IPv6	Yes	Yes	Yes	Yes

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Create an ASA Network Object

A network object can contain a host name, a network IP address, a range of IP addresses, a fully qualified domain name (FQDN), or a subnetwork expressed in CIDR notation. Network objects are used in access rules, network policies, and NAT rules. You can create, update, and delete network objects and network groups using Security Cloud Control.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **ASA** > **Network**.

Step 4 Enter an object name.

Step 5 Select **Create a network object**.

Step 6 (optional) Enter an object description.

Step 7 In the **Value** section, add the IP address information in one of these ways:

- Select **eq** and then enter a single IP address, a subnet address using CIDR notation, or a Partially Qualified Domain Name (PQDN).
- Select **range** and then enter a range of IP addresses. Enter the range with the beginning and ending address in the range separated by a space. For example, 10.1.1.1 10.1.1.255 or 2001:DB8:1::1 2001:DB8:1::3

Step 8 Click **Add**.

Important
The newly created network objects aren't associated with any ASA device as they aren't part of any rule or policy. To see these objects, select the **Unassociated** objects category in object filters.

Create an ASA Network Group

A **network group** can contain IP address values, network objects, and network groups. When you are creating a new network group, you can search for existing objects by their name, IP addresses, IP address range, or FQDN and add them to the network group. If the object isn't present, you can instantly create that object in the same interface and add it to the network group. Network groups can contain both IPv4 and IPv6 addresses.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **ASA** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network group**.

Step 6 (optional) Enter an object description.

Step 7 In the **Values** field, enter a value or object name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 8 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 9 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 10 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the check mark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the check mark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the check mark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Note
You can click the edit icon to modify the details. Clicking the delete button doesn't delete the object itself; instead, it removes it from the network group.

Step 11 After adding the required objects, click **Add** to create a new network group.

Step 12 Preview and deploy configuration changes for all devices, on page 597.

Edit an ASA Network Object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the network object and click the edit icon in the **Actions** pane.

Step 4 Edit the values in the dialog box in the same fashion that you created in the procedures above.

Note
Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Edit an ASA Network Group

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the network group you want to edit by using object filters and search field.

Step 3 Select the network group and click the edit icon in the **Actions** pane.

Step 4 If you want to change the objects or network groups that are already added to the network group, perform the following steps:

a. Click the edit icon appearing beside the object name or network group to modify them.

b. Click the checkmark to save your changes.

Note
You can click the remove icon to delete the value from a network group.

Step 5 If you want to add new network objects or network groups to this network group, you have to perform the following steps:

a. In the **Values** field, enter a new value or the name of an existing network object. When you start typing, Security Cloud Control provides object names or values that match your entry. You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

b. If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object, or network group to the new network group.

c. If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 6 Click **Save**. Security Cloud Control displays the policies that will be affected by the change.

Step 7 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 8 Preview and deploy configuration changes for all devices, on page 597.

Add Additional Values to a Shared Network Group in Security Cloud Control

The values in a shared network group that are present on all devices associated with it are called "default values." Security Cloud Control allows you to add "additional values" to the shared network group and assign those values to some devices associated with that shared network group. When Security Cloud Control deploys the changes to the devices, it determines the contents and pushes the "default values" to all devices associated with the shared network group and the "additional values" only to the specified devices.

For example, consider a scenario where you have four AD main servers in your head office that should be accessible from all your sites. Therefore, you have created an object group named "Active-Directory" to use it in all your sites. Now you want to add two more AD servers to one of your branch offices. You can do this

by adding their details as additional values specific to that branch office on the object group "Active-Directory." These two servers do not participate in determining whether the object "Active-Directory" is consistent or shared. Therefore, the four AD main servers are accessible from all your sites, but the branch office (with two additional servers) can access two AD servers and four AD main servers.

Note If there are inconsistent shared network groups, you can combine them into a single shared network group with additional values. See Resolve Inconsistent Object Issues for more information.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the shared network group that you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

- The **Devices** field shows the devices that the shared network group is present.
- The **Usage** field shows the rulesets associated with the shared network group.
- The **Default Values** field specifies the default network objects and their values associated with the shared network group that was provided during their creation. Next to this field, you can see the number of devices that contain this default value, and you can click to see their names and device types. You can also see the rulesets associated with this value.

Step 4 In the **Additional Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 5 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 6 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 7 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.

- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.
- Click **Add Value** to create an inline value without using an object. Enter a value and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 8 In the **Devices** column, click the cell associated with the newly added object and click **Add Devices**.

Step 9 Select the devices that you want and click **OK**.

Step 10 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 11 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 12 Preview and deploy configuration changes for all devices, on page 597.

Edit Additional Values in a Shared Network Group in Security Cloud Control

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object having the override you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click the cell in the **Devices** column to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Default Values** to push and make it an additional value of the shared network group. All devices associated with the shared network group are automatically assigned to it.
- Click arrow in **Override Values** to push and make it as default objects of the shared network group.
- Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and deploy configuration changes for all devices, on page 597.

Deleting Network Objects and Groups in Security Cloud Control

If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Deleting a network object or group from the **Objects** page deletes the replicated network object or group from the **Objects** page on the Cloud-Delivered Firewall Management Center and vice-versa.

Create or Edit a Firepower Network Object or Network Groups

A Firepower network object can contain a hostname, an IP address, or a subnet address expressed in CIDR notation. **Network groups** are conglomerates of network objects and network groups that are used in access rules, network policies, and NAT rules. You can create, read, update, and delete network objects and network groups using Security Cloud Control.

Firepower network objects and groups can be used by ASA, Firewall Threat Defense, FDM-managed, and Meraki devices. See Reuse network objects across products, on page 34.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Table 28: IP addresses that can be added to network objects

Device type	IPv4 / IPv6	Single Address	Range of addresses	Partially Qualified Domain Name (PQDN)	Subnet using CIDR Notation
Firepower	IPv4 / IPv6	Yes	Yes	Yes	Yes

Create a Firepower Network Object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button  to create an object.

Step 3 Click **FTD** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network object**.

Step 6 In the **Value** section:

- Select **eq** and enter a single IP address, a subnet address expressed in CIDR notation, or a Partially Qualified Domain Name (PQDN).
- Select **range** and enter an IP address range.

Note
Do not set a host bit value. If you enter a host bit value other than 0, Security Cloud Control unsets it while creating the object, because the Cloud-Delivered Firewall Management Center only accepts IPv6 objects with host bits not set.

Step 7 Click **Add**.

Attention: The newly created network objects aren't associated with any FDM-managed device as they aren't part of any rule or policy. To see these objects, select the **Unassociated** objects category in object filters. For more information, see Object Filters. Once you use the unassociated objects in a device's rule or policy, such objects are associated with that device.

Create a Firepower Network Group

A **network group** can contain network objects and network groups. When you create a new network group, you can search for existing objects by their name, IP addresses, IP address range, or FQDN and add them to the network group. If the object isn't present, you can instantly create that object in the same interface and add it to the network group.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

When you create an FTD, FDM, or ASA network object or group on the **Objects** page, a copy of the object is automatically added to the Cloud-Delivered Firewall Management Center and vice-versa. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the objects to the on-premises Firewall Management Center on which you want these objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button to create an object.

Step 3 Click **FTD** > **Network**.

Step 4 Enter an **Object Name**.

Step 5 Select **Create a network group**.

Step 6 In the **Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 7 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 8 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 9 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Note: You can click the edit icon to modify the details. Clicking the delete button doesn't delete the object itself; instead, it removes it from the network group.

Step 10 After adding the required objects, click **Save** to create a new network group.

Step 11 Preview and Deploy Configuration Changes for All Devices.

Edit a Firepower Network Object

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the network object and click the edit icon in the **Actions** pane.

Step 4 Edit the values in the dialog box in the same fashion that you created them in "Create a Firepower Network Group".

Note
Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Edit a Firepower Network Group

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the network group you want to edit by using object filters and search field.

Step 3 Select the network group and click the edit icon in the **Actions** pane.

Step 4 Change the object name and description if needed.

Step 5 If you want to change the objects or network groups that are already added to the network group, perform the following steps:

a. Click the edit icon appearing beside the object name or network group to modify them.

b. Click the checkmark to save your changes. **Note**: You can click the remove icon to delete the value from a network group.

Step 6 If you want to add new network objects or network groups to this network group, you have to perform the following steps:

a. In the **Values** field, enter a new value or the name of an existing network object. When you start typing, Security Cloud Control provides object names or values that match your entry. You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

b. If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

c. If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It's is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 7 Click **Save**. Security Cloud Control displays the policies that will be affected by the change.

Step 8 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 9 Preview and Deploy Configuration Changes for All Devices.

Add an Object Override

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object to which you want to add an override, using object filters and search field.

Step 3 Select the network object and click the edit icon in the **Actions** pane.

Step 4 Enter the value in the **Override Values** dialog box and click **+ Add Value**.

Important
The override you are adding must have the same type of value that the object contains. For example, to a network object, you can configure an override only with a network value and not a host value.

Step 5 Once you see that the value is added, click the cell in the **Devices** column in **Override Values**.

Step 6 Click **Add Devices**, and choose the device to which you want the override to be added. The device you select must contain the object to which you are adding the override.

Step 7 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 8 Click **Confirm** to finalize the addition of the override to the object and any devices affected by it.

Note
You can add more than one override to an object. However, you must select a different device, which contains the object, each time you are adding an override.

Step 9 See Object Overrides, on page 27 to know more about object overrides and Edit Object Overrides , on page 48 to edit an existing override.

Edit Object Overrides

You can modify the value of an existing override as long as the object is present on the device.

Procedure

Step 1 Navigate to **Objects**.

Step 2 Locate the object having override you want to edit by using object filters and search field.

Step 3 Select the object having override and click the edit icon in the Actions pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click on the cell in the **Devices** column in **Override Values** to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Override Values** to push and make it as the default value of the shared object.
- Click the delete icon next to the override you want to remove.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and Deploy Configuration Changes for All Devices.

Add Additional Values to a Shared Network Group

The values in a shared network group that are present on all devices associated with it are called "default values." Security Cloud Control allows you to add "additional values" to the shared network group and assign those values to some devices associated with that shared network group. When Security Cloud Control deploys the changes to the devices, it determines the contents and pushes the "default values" to all devices associated with the shared network group and the "additional values" only to the specified devices.

For example, consider a scenario where you have four AD main servers in your head office that should be accessible from all your sites. Therefore, you have created an object group named "Active-Directory" to use in all your sites. Now you want to add two more AD servers to one of your branch offices. You can do this by adding their details as additional values specific to that branch office on the object group "Active-Directory." These two servers do not participate in determining whether the object "Active-Directory" is consistent or shared. Therefore, the four AD main servers are accessible from all your sites, but the branch office (with two additional servers) can access two AD servers and four AD main servers.

Note If there are inconsistent shared network groups, you can combine them into a single shared network group with additional values. See Resolve Inconsistent Object Issues, on page 102 for more information.

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the shared network group you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

- The **Devices** field shows the devices the shared network group is present.
- The **Usage** field shows the rulesets associated with the shared network group.
- The **Default Values** field specifies the default network objects and their values associated with the shared network group that was provided during their creation. Next to this field, you can see the number of

devices that contain this default value, and you can click to see their names and device types. You can also see the rulesets associated with this value.

Step 4 In the **Additional Values** field, enter a value or name. When you start typing, Security Cloud Control provides object names or values that match your entry.

Step 5 You can choose one of the existing objects shown or create a new one based on the name or value that you have entered.

Step 6 If Security Cloud Control finds a match, to choose an existing object, click **Add** to add the network object or network group to the new network group.

Step 7 If you have entered a value or object that is not present, you can perform one of the following:

- Click **Add as New Object With This Name** to create a new object with that name. Enter a value and click the checkmark to save it.
- Click **Add as New Object** to create a new object. The object name and value are the same. Enter a name and click the checkmark to save it.

It is possible to create a new object even though the value is already present. You can make changes to those objects and save them.

Step 8 In the **Devices** column, click the cell associated with the newly added object and click **Add Devices**.

Step 9 Select the devices that you want and click **OK**.

Step 10 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 11 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 12 Preview and Deploy Configuration Changes for All Devices.

Edit Additional Values in a Shared Network Group

Note If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Changes you make to the ASA, FDM, and FTD network objects and groups are reflected in the corresponding Cloud-Delivered Firewall Management Center network object or group. In addition, an entry is created in the **Devices with Pending Changes** page for each on-premises Firewall Management Center with **Discover & Manage Network Objects** enabled, from which you can choose and deploy the changes to the on-premises Firewall Management Center on which you have these objects.

Deleting a network object or group from either page deletes the object or group from both pages.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object having the override you want to edit by using object filters and search field.

Step 3 Click the edit icon in the **Actions** pane.

Step 4 Modify the override value:

- Click the edit icon to modify the value.
- Click the cell in the **Devices** column to assign new devices. You can select an already assigned device and click **Remove Overrides** to remove overrides on that device.
- Click arrow in **Default Values** to push and make it an additional value of the shared network group. All devices associated with the shared network group are automatically assigned to it.
- Click arrow in **Override Values** to push and make it as default objects of the shared network group.
- Click the delete icon next to remove the object from the network group.

Step 5 Click **Save**. Security Cloud Control displays the devices that will be affected by the change.

Step 6 Click **Confirm** to finalize the change to the object and any devices affected by it.

Step 7 Preview and Deploy Configuration Changes for All Devices.

Deleting Network Objects and Groups in Security Cloud Control

If Cloud-Delivered Firewall Management Center is deployed on your tenant:

Deleting a network object or group from the **Objects** page deletes the replicated network object or group from the **Objects** page on the Cloud-Delivered Firewall Management Center and vice-versa.

Discover and manage On-Premises Firewall Management Center network objects

If you have an on-premises Firewall Management Center that you manage using Security Cloud Control and you want to share and manage its objects, perform this procedure:

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center** to view the **Services** page.

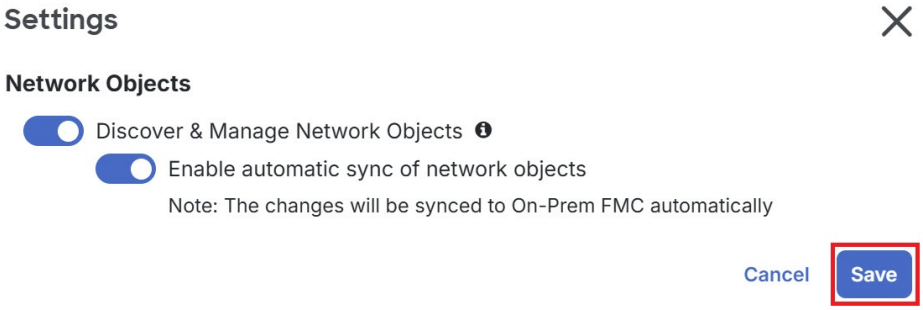
Step 2 If you have already onboarded an on-premises Firewall Management Center to Security Cloud Control, select it.

If you want to onboard a new on-premises Firewall Management Center, see Onboard an On-Prem Firewall Management Center.

Step 3 Choose **Settings** from the **Actions** pane. The **Actions** pane does not appear when you select more than one on-premises Firewall Management Center.

Note
You must be an admin or super admin to use **Settings**.

Step 4 Enable the **Discover & Manage Network Objects** toggle button. To automatically synchronize your changes with on-premises Firewall Management Center instead of staging them for review, turn on the **Enable automatic sync of network objects** toggle button. Then, click **Save**.



Note

- You cannot enable the **Discover & Manage Network Objects** toggle button if the selected on-premises Firewall Management Center has one or more child domains or if it has the Change Management workflow enabled.
- You cannot enable the **Enable automatic sync of network objects** toggle button if the **Discover & Manage Network Objects** toggle button is disabled.

For every new on-premises Firewall Management Center onboarded to Security Cloud Control, this toggle button needs to be enabled manually. After you enable this option, Security Cloud Control discovers objects from your on-premises Firewall Management Center. You can then share and manage these objects, and use them to set consistent object definitions across other platforms managed by Security Cloud Control.

In Security Cloud Control, when you add overrides to objects that are discovered from an on-premises Firewall Management Center and push the changes back, these objects can now be overridden, even if overrides were not allowed previously. The **Allow Overrides** check box in the **View Network Object** window is selected automatically when an override is added from Security Cloud Control.

Note
If you want to assign already-existing objects in Security Cloud Control to your on-premises Firewall Management Center, choose the on-premises Firewall Management Center and click **Assign Objects** from the **Actions** pane.

URL objects

URL objects and URL groups are used by Firepower devices. Use URL objects and groups (collectively referred to as URL objects) to define the URL or IP addresses of web requests. You can use these objects to implement manual URL filtering in access control policies or blocking in Security Intelligence policies. A URL object defines a single URL or IP address, whereas a URL group defines more than one URL or IP address.

When creating URL objects, keep the following points in mind:

- If you do not include a path, meaning the URL has no / character, Security Cloud Control matches by the server host name only. The host name matches if it appears after the :// separator or after any dot in the host name. For example, ign.com matches ign.com and www.ign.com, but not verisign.com.
- If you include one or more `/` characters, Security Cloud Control uses the entire URL string for substring matching, including the server name, path, and query parameters.
- Do not use manual URL filtering to block or allow individual web pages or parts of sites unless you accept the risk of unexpected matches. Server paths can change, and substring matching can match unintended servers, paths, or query parameter strings.
- Security Cloud Control disregards the encryption protocol. If you block a website, HTTP and HTTPS traffic to that website is blocked unless you use an application condition to target a specific protocol.
- Do not include the protocol when you create a URL object. For example, use example.com, not http://example.com.
- If you use a URL object to match HTTPS traffic in an access control rule, create the object with the subject common name in the public key certificate used to encrypt the traffic. Do not include subdomain information. For example, use example.com, not www.example.com.
- The subject common name in a certificate might not match the website domain name. For more consistent HTTPS URL filtering, use SSL Decryption policy so that URL filtering rules evaluate decrypted traffic.



Note URL objects do not match HTTPS traffic if the browser resumes a TLS session, because certificate information is no longer available. HTTPS connection matching can therefore be inconsistent.

Create or Edit an FDM-Managed URL Object

URL objects are reusable components that specify a URL or IP address.

To create a URL object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **URL**.

Step 3 Enter an object name and description.

Step 4 Select **Create a URL object.**

Step 5 Enter the specific URL or IP address for your object.

Step 6 Click **Add**.

Create a Firepower URL Group

A URL group can be made up of one or more URL objects representing one or more URLs or IP addresses. The Firepower Device Manager and Firepower Management Center also refer to these objects as "URL Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **URL**.

Step 3 Enter an object name and description.

Step 4 Select **Create a URL group.**

Step 5 Add an existing object by clicking **Add Object,** selecting an object, and clicking **Select**. Repeat this step to add more objects.

Step 6 Click **Add** when you are done adding URL objects to the URL group.

Edit a Firepower URL Object or URL Group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click  to edit.

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Geolocation objects

A geolocation object defines countries and continents that host the device that is the source or destination of traffic. You can use these objects in policies to control traffic instead of using IP addresses. For example, using geographical location, you could easily restrict access to a particular country without needing to know all of the potential IP addresses used there.

You can usually select geographical locations directly in a policy without using geolocation objects. Use an object when several policies need the same countries or continents.

Update the geolocation database

To use current geographical location data to filter traffic, Cisco recommends that you regularly update the geolocation database (GeoDB). You cannot update the GeoDB in Security Cloud Control. Refer to the following sections of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running to learn more about the GeoDB and how to update it.

- Updating System Databases and Feeds
- Updating System Databases

Create and Edit a Firepower Geolocation Filter Object

You can create a geolocation object by itself on the object page or when creating a security policy. This procedure creates a geolocation object from the object page.

To create a geolocation object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **Geolocation**.

Step 3 Enter an **object name** for the object and optionally, a **description**.

Step 4 In the filter bar, start typing the name of a country or a region and you are presented with a list of possible matches.

Step 5 Check the country, countries, or regions that you want to add to the object.

Step 6 Click **Add**.

Edit a Geolocation Object

Procedure

Step 1 In the left pane, choose **Objects**.

Step 2 Use the filter panes and search field to locate your object.

Step 3 In the **Actions** pane, click **Edit**.

Step 4 You can change the name of the object and add or remove countries and regions to your object.

Step 5 Click **Save**.

Step 6 You will be notified if any devices are impacted. Click **Confirm**.

Step 7 If a device or policy was impacted, open the **Security Devices** page and **Preview and Deploy** the changes to the device.

DNS group objects

A DNS group defines a list of DNS servers and associated attributes. DNS servers resolve FQDNs, such as www.example.com, to IP addresses. You can configure different DNS group objects for management and data interfaces.

Create a DNS Group Object

Use the following procedure to create a new DNS group object in Security Cloud Control:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **DNS Group**.

Step 3 Enter an **Object Name**.

Step 4 (Optional) Add a description.

Step 5 Enter the IP address of a **DNS server**. You can add up to six DNS servers; click the **Add DNS Server**. If you want to remove a server address, click the delete icon.

Note
The list is in priority order: the first server in the list is always used, and subsequent servers are used only if a response is not received from the servers above it. Although you can add up to six servers, only the first 3 servers listed will be used for the management interface.

Step 6 Enter the **Domain Search Name**. This domain is added to hostnames that are not fully qualified; for example, serverA instead of serverA.example.com.

Step 7 Enter the number of **Retries**. The number of times, from 0 to 10, to retry the list of DNS servers when the system does not receive a response. The default is 2. This setting applies to DNS groups used on the data interfaces only.

Step 8 Enter the **Timeout** value. The number of seconds, from 1 to 30, to wait before trying the next DNS server. The default is 2 seconds. Each time the system retries the list of servers, this timeout doubles. This setting applies to DNS groups used on the data interfaces only.

Step 9 Click **Add**.

Edit a DNS Group Object

You can edit a DNS group object that was created in Security Cloud Control or in Firewall Device Manager. Use the following procedure to edit an existing DNS group object:

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects**.

Step 2 Locate the **DNS Group Object** you want to edit by using object filters and search field.

Step 3 Select the object and click the edit icon in the **Actions** pane.

Step 4 Edit any of the following entries:

- Object Name.
- Description.
- DNS Server. You can edit, add, or remove DNS servers from this list.
- Domain Search Name.
- Retries.
- Timeout.

Step 5 Click **Save**.

Step 6 Preview and Deploy Configuration Changes for All Devices.

Delete a DNS Group Object

Use the following procedure to delete a DNS Group Object from Security Cloud Control:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the **DNS Group Object** you want to edit by using object filters and search field.

Step 3 Select the object and click the **Remove** icon.

Step 4 Confirm you want to delete the DNS group object and click **Ok**.

Step 5 Preview and Deploy Configuration Changes for All Devices.

Add a DNS Group Object as an FDM-Managed DNS Server

You can add a DNS group object as the preferred DNS Group for either the **Data Interface** or the **Management Interface**.

Certificate objects

Digital certificates provide digital identification for authentication. Certificates are used for SSL (Secure Socket Layer), TLS (Transport Layer Security), and DTLS (Datagram TLS) connections, such as HTTPS and LDAPS.

See the **About Certificates** and **Configuring Certificates** following sections of the Resuable Objects chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running.

About certificates

Digital certificates provide digital identification for authentication. Certificates include information that identifies a device or user, such as a name, serial number, company, department, or IP address. Certificates also include a copy of the public key for the user or device. Certificates are used for SSL (Secure Socket Layer), TLS (Transport Layer Security), and DTLS (Datagram TLS) connections, such as HTTPS and LDAPS.

You can create the following types of certificate:

- **Internal certificates**—Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a certificate authority (CA). You can also generate a self-signed certificate.

  The system comes with the following pre-defined internal certificates, which you can use as is or replace: **DefaultInternalCertificate** and **DefaultWebServerCertificate**

- **Internal Certificate Authority (CA)** certificates—Internal CA certificates are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a certificate authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

  The system comes with the following pre-defined internal CA certificate, which you can use as is or replace: **NGFW-Default-InternalCA**

- **Trusted Certificate Authority (CA)** certificates—A trusted CA certificate is used to sign other certificates. It is self-signed and called a root certificate. A certificate that is issued by another CA certificate is called a subordinate certificate.

  Certificate Authorities (CAs) are trusted authorities that "sign" certificates to verify their authenticity, thereby guaranteeing the identity of the device or user. CAs issue digital certificates in the context of a PKI, which uses public-key or private-key encryption to ensure security. A CA can be a trusted third party, such as VeriSign, or a private (in-house) CA that you establish within your organization. CAs are responsible for managing certificate requests and issuing digital certificates.

  The system includes many trusted CA certificates from third-party certificate authorities. These are used by SSL decryption policies for Decrypt Re-Sign actions.

For more information, see the **Certificate Types Used by Feature** section of the Reusable Objects chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running.

Certificate Types Used by Feature

You need to create the right type of certificate for each feature. The following features require certificates.

Identity Policies (Captive Portal)—Internal Certificate

(Optional.) Captive portal is used in identity policies. Users must accept this certificate when authenticating to the device for purposes of identifying themselves and receiving the IP address associated with their usernames. If you do not supply a certificate, the device uses an automatically generated certificate.

SSL Decryption Policy—Internal, Internal CA, and Trusted CA Certificates.

(Required.) The SSL decryption policy uses certificates for the these purposes:

- Internal certificates are used for known key decryption rules.
- Internal CA certificates are used for decrypt re-sign rules when creating the session between the client and FDM-managed device.
- Trusted CA certificates
  - They are used indirectly for decrypt re-sign rules when creating the session between the FDM-managed device and server. Unlike the other certificates, you do not directly configure these certificates in the SSL decryption policy; they simply need to be uploaded to the system. The system includes a large number of trusted CA certificates, so you might not need to upload any additional certificates.
  - When creating an Active Directory Realm object and configuring the directory server to use encryption.

Configuring Certificates

Certificates used in identity policies or SSL decryption policies must be an X509 certificate in PEM or DER format. You can use OpenSSL to generate certificates if needed, obtain them from a trusted Certificate Authority, or create self-signed certificates.

Use these procedures to configure certificate objects:

- Uploading Internal and Internal CA Certificates
- Uploading Trusted CA Certificates
- To view or edit a certificate, click either the edit icon or the view icon for the certificate.
- To delete an unreferenced certificate, click the trash can icon (delete icon) for the certificate. See Deleting Objects.

Uploading Internal and Internal CA Certificates

Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed certificate.

Internal Certificate Authority (CA) certificates (Internal CA certificates) are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to

the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Procedure

This procedure creates an internal or internal CA certificate by uploading a certificate file or pasting existing certificate text into a text box. If you want to generate a self-signed certificate, see Generating Self-Signed Internal and Internal CA Certificates.

To create an internal or internal CA certificate object, or when adding a new certificate object to a policy, follow this procedure:

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  - **a.** In the left pane, click **Objects**.
  - **b.** Click the plus button  and select **FTD** > **Certificate**
- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 3 In step 1, select **Internal Certificate** or **Internal CA.**

Step 4 In step 2, select **Upload** to upload the certificate file.

Step 5 In step 3, in the **Server Certificate** area, paste the certificate contents in the text box or upload the certificate file as explained in the wizard. If you paste the certificate into the text box, the certificate must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
 MIICMTCCAZoCCQDdUV3NGK/cUjANBgkqhkiG9w0BAQsFADBdMQswCQYDVQQGEwJV
UzETMBEGA1UECAwKU29tZS1TdGF0ZTEhMB8GA1UECgwYSW50ZXJuZXQgV2lkZ2l0
(...5 lines removed...)
shGJDReRYJQqilhHZrYTWZAYTrD7NQPHutK+ZiJng67cPgnNDuXEn55UwMOQoHBp
HMUwmhiGZlzJM8BpX2Js2yQ3ms30pr8rO+gPCPMCAwEAATANBgkqhkiG9w0BAQsF
AAOBgQCB02CebA6YjJCGr2CJZrQSeUwSveRBpmOuoqm98o2Z+5gJM5CkqgfxwCUn
RV7LRfQGFYd76V/5uor4Wx2ZCjqy6+zuQEm4ZxWNSZpA9UBixFXJCs9MBO4qkG5D
vlk3WYJfcgyJ10h4E4b0W2xiixBU+xoOTLRATnbKY36EWAG5cw==
-----END CERTIFICATE-----
```

Step 6 In step 3, in the **Certificate Key** area, paste the key contents into the Certificate Key text box or upload the key file as explained in the wizard. If you paste the key into the text box, the key must include the BEGIN PRIVATE KEY or BEGIN RSA PRIVATE KEY and END PRIVATE KEY or END PRIVATE KEY lines.

Note
The key cannot be encrypted.

Step 7 Click **Add**.

Uploading Trusted CA Certificates

A trusted Certificate Authority (CA) certificate is used to sign other certificates. It is self-signed and called a root certificate. A certificate that is issued by another CA certificate is called a subordinate certificate.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Obtain a trusted CA certificate from an external certificate authority, or create one using your own internal CA, for example, with OpenSSL tools. Then, use the following procedure to upload the certificate.

Procedure

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  a. In the left pane, click **Objects**.
  b. Click  > **FTD** > **Certificate**.
- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 3 In step 1, select **External CA Certificate** and click **Continue**. The wizard advances to step 3.

Step 4 In step 3, in the **Certificate Contents** area, paste the certificate contents in the text box or upload the certificate file as explained in the wizard.

The certificate must adhere to these guidelines:

- The name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.
- The certificate must be an X509 certificate in PEM or DER format.
- The certificate you paste must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
MIIFgTCCA2mgAwIBAgIJANvdcLnabFGYMA0GCSqGSIb3DQEBCwUAMFcxCzAJBgNV
BAYTAlVTMQswCQYDVQQIDAJUWDEPMA0GA1UEBwwGYXVzdGluMRQwEgYDVQQKDAsx
OTIuMTY4LjEuMTEUMBIGA1UEAwwLMTkyLjE2OC4xLjEwHhcNMTYxMDI3MjIzNDE3
WhcNMTcxMDI3MjIzNDE3WjBXMQswCQYDVQQGEwJVUzELMAkGA1UECAwCVFgxDzAN
BgNVBAcMBmF1c3RpbjEUMBIGA1UECgwLMTkyLjE2OC4xLjExFDASBgNVBAMMCzE5
Mi4xNjguMS4xMIICIjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA5NceYwtP
ES6Ve+S9z7WLKGX5JlF58AvH82GPkOQdrixn3FZeWLQapTpJZt/vgtAI2FZIK31h
(...20 lines removed...)
hbr6HOgKlOwXbRvOdksTzTEzVUqbgxt5Lwupg3b2ebQhWJz4BZvMsZX9etveEXDh
```

```
PY184V3yeSeYjbSCF5rP71fObG9Iu6+u4EfHp/NQv9s9dN5PMffXKieqpuN20Ojv
2b1sfOydf4GMUKLBUMkhQnip6+3W
-----END CERTIFICATE-----
```

Step 5 Click **Add**.

Generating Self-Signed Internal and Internal CA Certificates

Internal identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed certificate.

Internal Certificate Authority (CA) certificates (Internal CA certificates) are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed internal CA certificate. If you configure self-signed internal CA certificates, the CA runs on the device itself.

You can also create these certificates using OpenSSL, or obtain them from a trusted CA, and upload them. For more information, see Uploading Internal and Internal CA Certificates.

For information on the features that use these certificates, see Certificate Type Used by Feature.

Note New self-signed certificates are generated with a 5-year validity term. Be sure to replace certificates before they expire.

Warning Upgrading devices that have self-signed certificates may experience issues; see New Certificate Detected for more information.

Procedure

This procedure generates a self-signed certificate by entering the appropriate certificate field values in a wizard. If you want to create an internal or internal CA certificate by uploading a certificate file, see Uploading Internal and Internal CA Certificates.

To generate a self-signed certificate, follow this procedure:

Procedure

Step 1 Do one of the following:

- Create the certificate object in the Objects page:
  a. In the left pane, click **Objects**.

b. Click  > **FTD** > **Certificate**.

- Click **Create New Object** when adding a new certificate object to a policy.

Step 2 Enter a **Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 3 In step 1, select **Internal Certificate** or **Internal CA.**

Step 4 In step 2, select **Self-Signed** to create the self-signed certificate in this step.

Step 5 Configure at least one of the following for the certificate subject and issuer information.

- Country (C)— Select the country code from the drop-down list.
- State or Province (ST)— The state or province to include in the certificate.
- Locality or City (L)— The locality to include in the certificate, such as the name of the city.
- Organization (O)— The organization or company name to include in the certificate.
- Organizational Unit (Department) (OU)— The name of the organization unit (for example, a department name) to include in the certificate.
- Common Name (CN)— The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.

Step 6 Click **Add**.

ASA trustpoint objects

A trustpoint object lets you add digital certificates and install them on one or more managed ASA devices. A trustpoint object can contain an identity pair, an identity certificate only, or a CA certificate only. An identity pair includes an identity certificate and the issuer CA certificate.

You can configure many trustpoints in an ASA device. Supported certificate formats are PKCS12, PEM, and DER.

Add an identity certificate object by using PKCS12

This procedure creates an internal certificate identity or internal identity certificate by uploading a certificate file or pasting existing certificate text into a text box. You can generate as many identity certificates as you want.

You can upload a file encoded in **PKCS12** format. A PKCS12 is a single file that holds the CA server certificate, any intermediate certificates, and the private key in one encrypted file. A PKCS#12, or PFX, file holds a server certificate, intermediate certificates, and a private key in one encrypted file. Enter the **Passphrase** value for decryption.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate. The name is used in the configuration as an object name only, it does not become part of the certificate itself.

Step 4 In the **Certificate Type** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **Upload** to upload the certificate file.

The **Enrollment** step is set to Terminal.

Step 6 In the **Certificate Contents** step, enter the PKCS12 format details.

A PKCS#12, or PFX, file holds a server certificate, intermediate certificates, and a private key in one encrypted file. Enter the **Passphrase** value for decryption.

Step 7 Click **Continue**.

Step 8 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1-1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.
  - **SSL & IPSec** — Use for authenticating SSL & IPSec connections
  - **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension.
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 9 Click **Add**.

Create a self-signed ASA identity certificate object

This procedure describes steps for generating a self-signed certificate for your ASA by entering the appropriate certificate field values in a wizard. You can generate as many self-signed certificates as you want.

To create a Self-Signed identity certificate object, perform these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Identity Certificate** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **New** to upload the certificate file and click **Continue**.

Step 6 In the **Enrollment** step, select **Self-Signed** and click **Continue**.

The **Certificates Content** step appears. Read Self-Signed and CSR Certificate Generation Based on Certificate Contents to understand the CN and SANS content in the Self-Signed certificate that is being generated.

Step 7 In the **Certificate Contents** step, configure the following:

- **Country (C)**— Select the country code from the drop-down list.
- **State or Province (ST)**—The state or province to include in the certificate.
- **Locality or City (L)**—The locality to include in the certificate, such as the name of the city.
- **Organization (O)**—The organization or company name to include in the certificate.
- **Organizational Unit (Department) (OU)**—The name of the organization unit (for example, a department name) to include in the certificate.
- **Common Name (CN)**—The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.
- **Email Address (EA)**— The e-mail address associated with the identity certificate.
- **IP Address**— The ASA IP address on the network in four-part dotted-decimal notation.
- **Device's FQDN**— An unambiguous domain name, to indicate the position of the node in the DNS tree hierarchy.
- **Include Device's Serial Number**— Select the check box if you want to add the ASA serial number to the certificate parameters.

a) Click the **Key** tab.

- Choose the **RSA** or **ECDSA** key type.
- **Key Size**: If the key pair does not exist, defines the desired key size (modulus), in bits. The recommended key size for RSA is 1024 and for ECDSA is 348. The larger the modulus size, the more secure the key. However, keys with larger modulus sizes take longer to generate (a minute or more when larger than 512 bits) and longer to process when exchanged.
- Click **Continue**.

Step 8 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved

CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL — The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached** — Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.
  - **SSL & IPSec** — Use for authenticating SSL & IPSec connections
  - **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension. The presence of these items in a certificate i
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 9 Click **Add**.

Add an ASA identity certificate object for a Certificate Signing Request (CSR)

The Certification Authority (CA) server information and enrollment parameters are required to generate Certificate Signing Requests (CSRs) and obtain Identity Certificates from the specified CA. You need to select either Rivest-Shamir-Adleman (RSA) or Elliptic Curve Digital Signature Algorithm (ECDSA) key type to generate the request.

Create a trustpoint object by providing identification information and optionally uploading a CA certificate obtained from a CA.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Identity Certificate** step, select **Identity Certificate**.

Step 5 In the **Import Type** step, select **New** to upload the certificate file and click **Continue**.

Step 6 In the **Enrollment** step, select **Manual**.

Step 7 (optional) You can paste or upload the CA certificate obtained from your CA. You can leave the field empty.

Step 8 Click **Continue**.

The Certificates Content step appears. Read Self-Signed and CSR Certificate Generation Based on Certificate Contents to understand the CN and SANS content in the Signed certificate that is being generated.

Step 9 In the **Certificate Contents** step, configure the following:

- **Country (C)**— Select the country code from the drop-down list.
- **State or Province (ST)**—The state or province to include in the certificate.
- **Locality or City (L)**—The locality to include in the certificate, such as the name of the city.
- **Organization (O)**—The organization or company name to include in the certificate.
- **Organizational Unit (Department) (OU)**—The name of the organization unit (for example, a department name) to include in the certificate.
- **Common Name (CN)**—The X.500 common name to include in the certificate. This could be the name of the device, web site, or another text string. This element is usually required for successful connections. For example, you must include a CN in the internal certificate used for remote access VPN.
- **Email Address (EA)**— The e-mail address associated with the identity certificate.
- **IP Address**— The ASA IP address on the network in four-part dotted-decimal notation.

- **Subject Alternative Name (SAN)**— This field will be part of Certificate Subject DN as 'unstructuredName' as well. We recommend you use this field if the certificate is used for multiple domains or IP addresses.
  - **Use Device Host Name:** Host name of the device is used.
  - **Custom: Device's FQDN**— An unambiguous domain name, to indicate the position of the node in the DNS tree hierarchy.

    Note
    We recommend the values specified in CN and **Custom FQDN** are the same.

- **Include Device's Serial Number**— Select the check box if you want to include the serial number of ASA in the certificate. The CA uses the serial number to either authenticate certificates or to later associate a certificate with a particular device. If you are in doubt, include the serial number, as it is useful for debugging purposes.

a) Click the **Key** tab.
   - Choose the **RSA** or **ECDSA** key type.
   - **Key Size**: If the key pair does not exist, defines the desired key size (modulus), in bits. The recommended key size for RSA is 1024 and for ECDSA is 348. The larger the modulus size, the more secure the key. However, keys with larger modulus sizes take longer to generate (a minute or more when larger than 512 bits) and longer to process when exchanged.
   - Click **Continue**.

Step 10 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default, the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

  OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

  Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

  Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Use Identity Certificate for** — Specify how the enrolled ID certificate can be used.
  - **SSL & IPSec** — Use for authenticating SSL & IPSec connections
  - **Code Signer** — Code signer certificates are special certificates whose associated private keys are used to create digital signatures. The certificates used to sign code are obtained from a CA, with the signed code itself revealing the certificate origin.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if this certificate should be able to sign other certificates. The basic constraints extension identifies whether the subject of the certificate is a Certificate Authority (CA), in which case the certificate can be used to sign other certificates. The CA flag is part of this extension. The presence of these items in a certificate i
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 11 Click **Add**.

This creates a trustpoint certificate object.

Add a trusted CA certificate object for ASA

Obtain a trusted CA certificate from an external certificate authority, or create one using your own internal CA, for example, with OpenSSL tools. You can upload a file encoded in one of the following supported formats:

- Distinguished Encoding Rules (DER)
- Privacy-enhanced Electronic Mail (PEM)

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  and select **ASA** > **Trustpoints**.

Step 3 Enter an **Object Name** for the certificate.

The name is used in the configuration as an object name only; it does not become part of the certificate itself.

Step 4 In the **Certificate Type** step, select **Trusted CA Certificate**.

Step 5 In the **Certificate Contents** step, paste the certificate contents in the text box or upload the CA certificate file as explained in the wizard.

Step 6 Click **Continue**. The wizard advances to step 4.

The certificate must follow these guidelines:

- The name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.
- The certificate must be an X509 certificate in PEM or DER format.
- The certificate you paste must include the BEGIN CERTIFICATE and END CERTIFICATE lines. For example:

```
-----BEGIN CERTIFICATE-----
MIIFgTCCA2mgAwIBAgIJANvdcLnabFGYMA0GCSqGSIb3DQEBCwUAMFcxCzAJBgNV
BAYTAlVTMQswCQYDVQQIDAJUWDEPMA0GA1UEBwwGYXVzdGluMRQwEgYDVQQKDAsx
OTIuMTY4LjEuMTEUMBIGA1UEAwwLMTkyLjE2OC4xLjEwHhcNMTYxMDI3MjIzNDE3
WhcNMTcxMDI3MjIzNDE3WjBXMQswCQYDVQQGEwJVUzELMAkGA1UECAwCVFgxDzAN
BgNVBAcMBmF1c3RpbjEUMBIGA1UECgwLMTkyLjE2OC4xLjExFDASBgNVBAMMCzE5
Mi4xNjguMS4xMIICIjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA5NceYwtP
ES6Ve+S9z7WLKGX5JlF58AvH82GPkOQdrixn3FZeWLQapTpJZt/vgtAI2FZIK31h
(...20 lines removed...)
hbr6HOgKlOwXbRvOdksTzTEzVUqbgxt5Lwupg3b2ebQhWJz4BZvMsZX9etveEXDh
PY184V3yeSeYjbSCF5rP71fObG9Iu6+u4EfHp/NQv9s9dN5PMffXKieqpuN20Ojv
2b1sfOydf4GMUKLBUMkhQnip6+3W
-----END CERTIFICATE-----
```

Step 7 In the **Advanced Options** step, you can configure the following:

In the **Revocation** tab, you can configure the following:

- **Enable Certificate Revocation Lists (CRL)** — Check to enable CRL checking.

  By default, the **Use CRL distribution point from the certificate** check box is selected to obtain the revocation lists distribution URL from the certificate.

  Cache Refresh Time (in minutes) — Enter the number of minutes between cache refreshes. The default is 60 minutes. The range is 1 to 1440 minutes. To avoid having to retrieve the same CRL from a CA repeatedly, the ASA can store retrieved CRLs locally, which is called CRL caching. The CRL cache capacity varies by platform and is cumulative across all contexts. If an attempt to cache a newly retrieved CRL would exceed its storage limits, the ASA removes the least recently used CRL until more space becomes available.

- **Enable Online Certificate Status Protocol (OCSP)** — Check to enable OCSP checking.

OCSP Server URL—The URL of the OCSP server checking for revocation if you require OCSP checks. This URL must start with **`http://`**.

Disable Nonce Extension — Enable the check box which cryptographically binds requests with responses to avoid replay attacks. This process works by matching the extension in the request to that in the response, ensuring that they are the same. Uncheck the **Disable Nonce Extension** check box if the OCSP server you are using sends pregenerated responses that do not include this matching nonce extension.

Evaluation Priority — Specify whether to evaluate the revocation status of a certificate first in CRL or OSCP.

- **Consider the certificate valid if revocation information cannot be reached**— Select this check box to consider the certificate to be a valid certificate if revocation information is unreachable.

  For more information on revocation check, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Click the **Others** tab:

- **Use CA Certificate for the Validation of** — Specify the type of connections that can be validated by this CA.
  - **IPSec Client** — Validates certificate presented by remote SSL servers.
  - **SSL Client** — Validates certificates presented by incoming SSL connections.
  - **SSL Server** — Validates certificates presented by incoming IPSec connections.
- **Other Options**:
  - **Enable CA flag in basic constraints extension** — Select this option if you want to validate if the subject of the certificate is a CA using the basic constraints extension.
  - **Accept certificates issued by this CA** — Select this option to indicate that the ASA should accept certificates from the specified CA.
  - **Accept certificates issued by the subordinates CAs of this CA** — Select this option to indicate that the ASA should accept certificates from the subordinate CA.
  - **Ignore IPSec Key Usage** — Select this option if you do not want to validate values in the key usage and extended key usage extensions of IPsec remote client certificates. You can suppress key usage checking on IPsec client certificates. By default, this option is not enabled.

Step 8 Click **Add**.

This creates a trustpoint certificate object.

Self-Signed and CSR certificate generation based on certificate contents

You need to have an idea of the CN and SANS content in the Self-Signed and CSR certificates. The content is based on the parameters you specify during their creation. You need to configure the parameters precisely for the AnyConnect clients to connect to the intended VPN headends of your organization.

This section provides different use cases with examples to give you an idea of the content of Self-Signed and CSR certificates based on the parameters specified.

Usecase 1: Different CN and FQDN values

Example:

- Common Name (CN): mywebsite.com
- FQDN: mysan.com

Table 29: Example: Different CN and FQDN values

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	mysan.com	mysan.com
CSR	mywebsite.com	mysan.com	-

Usecase 2: FQDN field set to None

Example:

- Common Name (CN): mywebsite.com
- FQDN: None

Table 30: Example: FQDN field set to None

	Common Name	SANS
Self-Signed	Host Name	-
CSR	mywebsite.com	-

Usecase 3: No FQDN (Default FQDN)

Example:

- Common Name (CN): mywebsite.com

Table 31: Example: No FQDN (Default FQDN)

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	Host Name	-
CSR	mywebsite.com	Host Name	Host Name

Usecase 4: IP Address is specified in FQDN

Example:

- Common Name (CN): mywebsite.com

- FQDN: 4.5.6.7

Table 32: Example: IP Address is specified in FQDN

	Common Name	unstructuredName	SANS
Self-Signed	mywebsite.com	4.5.6.7	-
CSR	mywebsite.com	4.5.6.7	4.5.6.7

Usecase 5: IP Address is Specified

Example:

- IP Address: 4.5.6.7
- Common Name (CN): mywebsite.com
- FQDN: fqdn.com

Table 33: Example: IP Address is specified

	Common Name	unstructuredAddress	unstructuredName	SANS
Self-Signed	mywebsite.com	4.5.6.7	fqdn.com	-
CSR	mywebsite.com	4.5.6.7	fqdn.com	fqdn.com

Usecase 6: Serial Number Check box is Selected

Example:

- Serial Number: 9AQXMWOKDT9

Table 34: Example: IP Serial Number Check box is Selected

	serialNumber	SANS
Self-Signed	9AQXMWOKDT9	-
CSR	9AQXMWOKDT9	fqdn.com

Usecase 7: Email Address is Specified

Example:

- EA: abc@xyz.com

Table 35: Example: Email Address is Specified

	unstructredName	emailAddress	SANS
Self-Signed	Host Name	abc@xyz.com	Host Name

	unstructredName	emailAddress	SANS
CSR	Host Name	abc@xyz.com	-

IPsec proposal and IKE policy objects

IPsec is one of the most secure methods for setting up a VPN. IPsec provides data encryption at the IP packet level, offering a robust security solution that is standards-based. With IPsec, data is transmitted over a public network through tunnels. A tunnel is a secure, logical communication path between two peers. Traffic that enters an IPsec tunnel is secured by a combination of security protocols and algorithms called a transform set. During the IPsec security association (SA) negotiation, peers search for a transform set that is the same at both peers.

There are separate IPsec proposal objects based on the IKE version, IKEv1, or IKEv2:

- When you create an IKEv1 IPsec proposal, you select the mode in which IPsec operates, and define the required encryption and authentication types. You can select single options for the algorithms. If you want to support multiple combinations in a VPN, create and select multiple IKEv1 IPsec Proposal objects.
- When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and antireplay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

Create or edit an IKEv1 IPsec proposal object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel. There are separate objects for IKEv1 and IKEv2. Currently, Security Cloud Control supports IKEv1 IPsec proposal objects.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and anti-replay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

There are several pre-defined IKEv1 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

This procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv1 IPsec Proposals objects while editing the IKEv1 IPsec settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Proposal** link shown in the object list.

Procedure

Step 1 From the left pane, click **Objects**.

Step 2 Do one of these things:

- Click , and select **FTD > IKEv1 IPsec Proposal** to create the new object.
- On the object page, select the IPsec proposal you want to edit and click **Edit** in the **Actions** pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Select the Mode in which the IKEv1 IPsec Proposal object operates.

- **Tunnel mode** encapsulates the entire IP packet. The IPSec header is added between the original IP header and a new IP header. This is the default. Use tunnel mode when the firewall is protecting traffic to and from hosts positioned behind the firewall. Tunnel mode is the normal way regular IPSec is implemented between two firewalls (or other security gateways) that are connected over an untrusted network, such as the Internet.
- **Transport mode** encapsulates only the upper-layer protocols of an IP packet. The IPSec header is inserted between the IP header and the upper-layer protocol header (such as TCP). Transport mode requires that both the source and destination hosts support IPSec, and can only be used when the destination peer of the tunnel is the final destination of the IP packet. Transport mode is generally used only when protecting a Layer 2 or Layer 3 tunneling protocol such as GRE, L2TP, and DLSW.

Step 5 Select the **ESP Encryption** (Encapsulating Security Protocol encryption) algorithm for this proposal. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.

Step 6 Select the **ESP Hash** or integrity algorithm to use for authentication. For an explanation of the options, see Deciding Which Hash Algorithms to Use, on page 483.

Step 7 Click **Add**.

Create or edit an IKEv2 IPsec proposal object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.

When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

There are several pre-defined IKEv2 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv2 IPsec Proposals objects while editing the IKEv2 IPsec settings in a VPN connection by clicking the Create New IPsec Proposal link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click  and select **FTD > IKEv2 IPsec Proposal** to create the new object.
- In the object page, select the IPsec proposal you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Configure the IKE2 IPsec proposal objects:

- **Encryption**—The Encapsulating Security Protocol (ESP) encryption algorithm for this proposal. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.
- **Integrity Hash**—The hash or integrity algorithm to use for authentication. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Hash Algorithms to Use, on page 483.

Step 5 Click **Add**.

Global IKE policies

Internet Key Exchange (IKE) is a key management protocol that is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

The IKE negotiation comprises two phases. Phase 1 negotiates a security association between two IKE peers, which enables the peers to communicate securely in Phase 2. During Phase 2 negotiation, IKE establishes SAs for other applications, such as IPsec. Both phases use proposals when they negotiate a connection. An IKE proposal is a set of algorithms that two peers use to secure the negotiation between them. IKE negotiation begins by each peer agreeing on a common (shared) IKE policy. This policy states which security parameters are used to protect subsequent IKE negotiations.

IKE policy objects define the IKE proposals for these negotiations. The objects that you enable are the ones used when the peers negotiate a VPN connection: you cannot specify different IKE policies per connection. The relative priority of each object determines which of these policies are tried first, with the lower number being a higher priority. The connection is not established if the negotiation fails to find a policy that both peers can support.

To define the global IKE policy, you select which objects to enable for each IKE version. If the pre-defined objects do not satisfy your requirements, create new policies to enforce your security policy.

Create or edit an IKEv1 policy

Internet Key Exchange (IKE) version 1 policy objects contain the parameters required for IKEv1 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv1 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv1 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Policy** link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click + and select **FTD > IKEv1 Policy** to create a new IKEv1 policy.
- In the object page, select the IKEv1 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name**, up to 128 characters.

Step 4 Configure the IKEv1 properties.

- **Priority**: The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **Encryption**: The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. For an explanation of the options, see Deciding Which Encryption Algorithm to Use.
- **Diffie-Hellman Group**: The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use.
- **Lifetime**: The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with

shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).

- **Authentication**: The method of authentication to use between the two peers. For more information, see Deciding Which Authentication Method to Use, on page 484.
  - **Preshared Key**: Use the preshared key that is defined on each device. These keys allow for a secret key to be shared between two peers and to be used by IKE during the authentication phase. If the peer is not configured with the same preshared key, the IKE SA cannot be established.
  - **Certificate**: Use the device identity certificates for the peers to identify each other. You must obtain these certificates by enrolling each peer in a Certificate Authority. You must also upload the trusted CA root and intermediate CA certificates used to sign the identity certificates in each peer. The peers can be enrolled in the same or a different CA. You cannot use self-signed certificates for either peer.
- **Hash**: The hash algorithm for creating a message digest, which is used to ensure message integrity. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.

Step 5 Click **Add**.

Create or edit an IKEv2 policy

Internet Key Exchange (IKE) version 2 policy objects contain the parameters required for IKEv2 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv2 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv2 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv2 Policy** link shown in the object list.

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects**.

Step 2 Do one of these things:

- Click  and select **FTD > IKEv2 Policy** to create a new IKEv2 policy.
- In the object page, select the IKEv2 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name**, up to 128 characters.

Step 4 Configure the IKEv2 properties.

- **Priority**: The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **State**: Whether the IKE policy is enabled or disabled. Click the toggle to change the state. Only enabled policies are used during IKE negotiations.
- **Encryption**: The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. Select all algorithms that you want to allow, although you cannot include both mixed-mode (AES-GCM) and normal mode options in the same policy. (Normal mode requires that you select an integrity hash, whereas mixed-mode prohibits a separate integrity hash selection.) The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use, on page 482.
- **Diffie-Hellman Group**: The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest group until a match is agreed upon. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use, on page 483.
- **Integrity Hash**: The integrity portion of the hash algorithm for creating a message digest, which is used to ensure message integrity. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. The integrity hash is not used with the AES-GCM encryption options. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.
- **Pseudo-Random Function (PRF) Hash**: The pseudo-random function (PRF) portion of the hash algorithm, which is used as the algorithm to derive keying material and hashing operations required for the IKEv2 tunnel encryption. In IKEv1, the Integrity and PRF algorithms are not separated, but in IKEv2, you can specify different algorithms for these elements. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Encryption and Hash Algorithms Used in VPN, on page 482.
- **Lifetime**: The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).

Step 5 Click **Add**.

Remote access VPN objects

Remote access VPN (RA VPN) objects include identity sources, RADIUS servers and groups, and group policy objects for ASA and FDM-managed devices.

Identity sources for FDM-Managed devices

Identity sources for FDM-managed devices include Microsoft AD realms and RADIUS servers. You can use identity source information to associate user identity with an IP address, authenticate RA VPN connections, or authenticate access to Security Cloud Control Firewall Management.

Click **Objects**, then click  and choose **> RA VPN Objects (ASA & FTD)** > **Identity Source** to create your sources. You would then use these objects when you configure the services that require an identity source. You can apply appropriate filters to search existing sources and manage them.

Active Directory realms for FDM-Managed devices

Active Directory provides user account and authentication information. When you deploy a configuration that includes an AD realm to an FDM-managed device, Security Cloud Control Firewall Management fetches users and groups from the AD server.

You can use AD realms for these purposes:

- Remote Access VPN, as a primary identity source. You can use AD in conjunction with a RADIUS server.
- Identity policy active authentication and passive authentication user identity source.
- Identity rule active authentication for a user.

Security Cloud Control Firewall Management requests an updated list of user groups once every 24 hours. Because you can add a maximum of 50 users or groups to a rule, selecting groups usually makes more sense than selecting individual users.

If you create an AD realm in Security Cloud Control Firewall Management, Security Cloud Control Firewall Management remembers the AD password when you create related identity source objects and add those objects to an identity rule.

If you use an AD realm object that was created in Firewall Device Manager, Security Cloud Control Firewall Management does not read the AD password. You must manually enter the correct AD password in Security Cloud Control Firewall Management.

You can use AD on Windows Server 2008 and 2012.

Metadata	Active Directory field
LDAP user name	samaccountname
First name	givename
Last Name	sn
email address	mail userprincipalname (if mail has no value)
Department	department distinguishedname (if department has no value)
Telephone number	telephonenumber

Determining the Directory Base DN

When you configure directory properties, you need to specify the common base Distinguished Name (DN) for users and groups. The base is defined in your directory server and differs from network to network. You must enter the correct bases for identity policies to work. If the base is wrong, the system cannot determine user or group names, and thus identity-based policies will be inoperable.

Note To get the correct bases, consult the administrator who is responsible for the directory servers.

For an active directory, you can determine the correct bases by logging into the AD server as a domain administrator, and using the **dsquery** command at a command prompt as follows to determine the bases:

User search base

Enter the **dsquery user** command with known username (partial or complete) to determine the base distinguished name. For example, the following command uses the partial name "John*" to return information for all users that start with "John."

C:\Users\Administrator>dsquery user -name "John*"

"CN=John Doe,CN=Users,DC=csc-lab,DC=example,DC=com"

The base DN would be "DC=csc-lab,DC=example,DC=com."

Group search base

Enter the **dsquery group** command with a known group name to determine the base DN. For example, the following command uses the group name Employees to return the distinguished name:

C:\>dsquery group -name "Employees"

"CN=Employees,CN=Users,DC=csc-lab,DC=example,DC=com"

The group base DN would be "DC=csc-lab,DC=example,DC=com."

You can also use the ADSI Edit program to browse the AD structure (**Start** > **Run** > **adsiedit.msc**). In ADSI Edit, right click any object, such as an organizational unit (OU), group, or user, and choose **Properties** to view the distinguished name. You can then copy the string of DC values as the base.

To verify that you have the correct base:

Procedure

Step 1 Click the **Test Connection** button in the directory properties to verify connectivity. Resolve any problems, and save the directory properties.

Step 2 Commit changes to the device.

Step 3 Create an access rule, select the **Users** tab, and try to add known user and group names from the directory. You should see auto-complete suggestions as you type for matching users and groups in the realm that contains the directory. If these suggestions appear in a drop-down list, then the system was able to query the directory successfully. If you see no suggestions, and you are certain the string you typed should appear in a user or group name, you need to correct the corresponding search base.

Refer to Create and Edit a Firepower Threat Defense Active Directory Realm Object for more information.

RADIUS servers and groups

You can use RADIUS servers to authenticate and authorize administration users.

When you configure a feature to use RADIUS servers, you select a RADIUS group instead of individual servers. A RADIUS group is a collection of RADIUS servers that are copies of each other. If a group has more than one server, they form a chain of backup servers to provide redundancy in case one server becomes unavailable. But even if you have only one server, you must create a one-member group to configure RADIUS support for a feature.

You can use this source for the following purposes:

- Remote Access VPN, as an identity source for authentication, and for authorization and accounting. You can use AD in conjunction with a RADIUS server.
- Identity policy, as a passive identity source to collect user identity from remote access VPN logins.

See Create and Edit a Firepower Threat Defense RADIUS Server Object or Group for more information.

Create or edit an Active Directory realm object

When you create or edit an identity source object such as an AD realm object, Security Cloud Control sends the configuration request to the FDM-managed devices through the SDC. The FDM-managed device then communicates with the configured AD realm.

Note that Security Cloud Control does not read the Directory Password for AD realms that are configured through the Firewall Device Manager console. If you use an AD realm object that was originally created in Firewall Device Manager, you must manually enter the Directory Password.

Create an FTD Active Directory realm object

Use the following procedure to create an object:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **RA VPN Objects (ASA & FTD)** > **Identity Source**.

Step 3 Enter an **Object Name** for the object.

Step 4 Select the **Device Type** is as **FTD**.

Step 5 In the first part of the wizard, select **Active Directory Realm** as the **Identity Source Type**. Click **Continue**.

Step 6 Configure the basic realm properties.

- **Directory Username, Directory Password -** The distinguished username and password for a user with appropriate rights to the user information you want to retrieve. For AD, the user does not need elevated privileges. You can specify any user in the domain. The username must be fully qualified; for example, Administrator@example.com (not simply Administrator).

  Note

The system generates ldap-login-dn and ldap-login-password from this information. For example, Administrator@example.com is translated as cn=administrator,cn=users,dc=example,dc=com. Note that cn=users is always part of this translation, so you must configure the user you specify here under the common name "users" folder.

- **Base Distinguished Name** - The directory tree for searching or querying user and group information, that is, the common parent for users and groups. For example, cn=users,dc=example,dc=com.
- **AD Primary Domain** - The fully qualified AD domain name that the device should join. For example, example.com.

Step 7 Configure the directory server properties.

- **Hostname/IP Address** - The hostname or IP address of the directory server. If you use an encrypted connection to the server, you must enter the fully-qualified domain name, not the IP address.
- **Port** - The port number used for communications with the server. The default is 389. Use port 636 if you select LDAPS as the encryption method.
- **Encryption** - To use an encrypted connection for downloading user and group information, select the desired method,**STARTTLS** or **LDAPS**. The default is **None**, which means that user and group information is downloaded in clear text.
  - **STARTTLS** negotiates the encryption method and uses the strongest method supported by the directory server. Use port 389. This option is not supported if you use the realm for remote access VPN.
  - **LDAPS** requires LDAP over SSL. Use port 636.
- **Trusted CA Certificate** - If you select an encryption method, upload a Certificate Authority (CA) certificate to enable a trusted connection between the system and the directory server. If you are using a certificate to authenticate, the name of the server in the certificate must match the server Hostname / IP Address. For example, if you use 10.10.10.250 as the IP address but ad.example.com in the certificate, the connection fails.

Step 8 (Optional) Use the **Test** button to validate the configuration.

Step 9 (Optional) Click **Add another configuration** to add multiple AD servers to the AD realm. The AD servers need to be duplicates of each other and support the same AD domain. Therefore, the basic realm properties such as **Directory name**, **Directory Password**, and **Base Distinguished Name** must be the same across all AD servers associated with that AD realm.

Step 10 Click **Add**.

Step 11 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit an FTD Active Directory realm object

Note that you cannot change the Identity Source Type when editing an Identity source object. You must create a new object with the correct type.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created in the procedures above. Expand the configuration bar listed below to edit or test the hostname/IP address or encryption information.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create or edit a RADIUS server object or group

When you create or edit an identity source object such as a RADIUS server object or a group of RADIUS server objects, Security Cloud Control sends the configuration request to the FDM-managed devices through the SDC. The FDM-managed device then communicates with the configured AD realm.

Create a RADIUS server object

RADIUS servers provide AAA (authentication, authorization, and accounting) services.

Use the following procedure to create an object:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **RA VPN Objects (ASA & FTD)** > **Identity Source**.

Step 3 Enter an **Object name** for the object.

Step 4 For the **Device Type**, select **FTD**.

Step 5 For the **Identity Source** type, select **RADIUS Server**. Click **Continue**.

Step 6 Edit the Identity Source configuration with the following properties:

- **Server Name or IP Address** - The fully-qualified host name (FQDN) or IP address of the server.
- **Authentication Port** (Optional) - The port on which RADIUS authentication and authorization are performed. The default is 1812.
- **Timeout** - The length of time, 1-300 seconds, that the system waits for a response from the server before sending the request to the next server. The default is 10 seconds.
- Enter the **Server Secret Key**(Optional) - The shared secret that is used to encrypt data between the Firepower Threat Defense device and the RADIUS server. The key is a case-sensitive, alphanumeric

string of up to 64 characters, with no spaces. The key must start with an alphanumeric character or an underscore, and it can contain the special characters: $ & - _ . + @. The string must match the one configured on the RADIUS server. If you do not configure a secret key, the connection is not encrypted.

Step 7 If you have Cisco Identity Services Engine (ISE) already configured for your network and are using the server for remote access VPN Change of Authorization configuration, click the **RA VPN Only** link and configure the following:

- **Redirect ACL** - Select the extended Access Control List (ACL) to use for the RA VPN redirect ACL. If you do not have an extended ACL you must create the required extended ACL object from a Smart CLI template in the FDM-managed device console. See the **Configuring Smart CLI Objects** section of the Advanced Configuration chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager for the version your device is running. The purpose of the redirect ACL is to send initial traffic to ISE to assess the client posture. The ACL should send HTTPS traffic to ISE, but not traffic that is already destined for ISE, or traffic that is directed to a DNS server for name resolution. See the **Configure Change of Authorization** section of the Virtual Private Networks (VPN) chapter of the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Managerfor the version your device is running.
- **Diagnostic Interface** -Enabling this option allows the system to always use the "Diagnostic" interface to communicate with the server. If you leave this disabled, Security Cloud Control will default to using the routing table to determine the which interface to use.

Step 8 Click **Add**.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create a RADIUS server group

A RADIUS server group contains one or more RADIUS server objects. The servers within a group must be copies of each other. These servers form a chain of backup servers, so that if the first server is unavailable, the system can try the next server in the list.

Use the following procedure to create an object group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click , then click **FTD** > **Identity Source**.

Step 3 Enter an **Object name** for the object.

Step 4 Select the **Device Type** as **FTD**.

Step 5 Select **RADIUS Server Group** as the Identity Source Type. Click **Continue**.

Step 6 Edit the Identity Source configuration with the following properties:

- **Dead Time** - Failed servers are reactivated only after all servers have failed. The dead time is how long to wait after the last server fails before reactivating all servers.
- **Maximum Failed Attempts** - The number of failed requests (that is, requests that do not get a response) sent to a RADIUS server in the group before trying the next server. When the maximum number of failed

attempts is exceeded, the system marks the server as Failed. For a given feature, if you configured a fallback method using the local database, and all the servers in the group fail to respond, then the group is considered to be unresponsive, and the fallback method is tried. The server group remains marked as unresponsive for the duration of the dead time, so that additional AAA requests within that period do not attempt to contact the server group, and the fallback method is used immediately.

- **Dynamic Authorization/Port** (Optional) - If you enable RADIUS dynamic authorization or change of authorization (CoA) services for this RADIUS server group, the group will be registered for CoA notification and listen on the specified port for CoA policy updates from Cisco Identity Services Engine (ISE). Enable dynamic authorization only if you are using this server group in a remote access VPN in conjunction with ISE.

Step 7 Select an AD realm that supported the RADIUS server from the drop-down menu. If you have not already created an AD realm, click **Create** from inside the drop-down menu.

Step 8 Click the **Add** button  to add existing RADIUS server objects. Optionally, you can create a new RADIUS server object from this window is necessary.

Note
Add these objects in priority, as the first server in the list is used until it is unresponsive. FDM-managed device then defaults to the next server in the list.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit a Radius server object or group

Use the following procedure to edit a Radius server object or Radius server group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon  in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created them in the procedures above. To edit or test the hostname/IP address or encryption information, expand the configuration bar.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and Deploy now the changes you made, or wait and deploy multiple changes at once.

Security zone object

A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. You can define multiple zones, but a given interface can be in one zone only.

The Firepower system creates the following zones during initial configuration and they are displayed in Security Cloud Control's object page. You can edit zones to add or remove interfaces, or you can delete the zones if you no longer use them.

- **inside_zone**: Includes the inside interface. This zone is intended to represent internal networks.
- **outside_zone**: Includes the outside interface. This zone is intended to represent networks external to your control, such as the internet.

Typically, you would group interfaces by the role they play in your network. For example, you would place the interface that connects to the internet in the **outside_zone** security zone, and all of the interfaces for your internal networks in the **inside_zone** security zone. Then, you could apply access control rules to traffic coming from the outside zone and going to the inside zone.

Before creating zones, consider the access rules and other policies you want to apply to your networks. For example, you do not need to put all internal interfaces into the same zone. If you have 4 internal networks, and you want to treat one differently than the other three, you can create two zones rather than one. If you have an interface that should allow outside access to a public web server, you might want to use a separate zone for the interface.

Create a security zone object

To create a security zone object, follow these instructions:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **Security Zone** to create the object.

Step 3 Enter an object name and, optionally, a description.

Step 4 Select a mode:

- **Routed** : Routed interfaces are the normal interfaces used for through traffic that can apply security policies.
- **Passive**: Passive interfaces operate as packet sniffers and do not affect the traffic flow through the device.

Step 5 Select the interfaces to put in the security zone.

Step 6 Click **Add.**

Edit a security zone object

After onboarding an FDM-managed device, you will find there are already at least two security zones, one is the inside_zone and the other is the outside_zone. These zones can be edited or deleted. To edit any security zone object, follow these instructions:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Find the object you want to edit:

- If you know the name of the object, you can search for it in the Objects page:
  - Filter the list by security zone.
  - Enter the name of the object in the search field.
  - Select the object.
- If you know the object is associated with a device, you can search for it starting on the **Security Devices** page.
  - In the left pane, click **Security Devices**.
  - Click the **Devices** tab.
  - Click the apporpriate tab.
  - Use the device filter and search bar to locate your device.
  - Select the device.
  - In the Management pane at the right, click  **Objects.**
  - Use the object filter  and search bar to locate the object you are looking for.

Note
If the security zone object you created is not associated with a rule in a policy for your device, it is considered "unassociated" and you will not see it among the search results for a device.

Step 3 Select the object.

Step 4 Click the **Edit** icon  in the Actions pane at the right.

Step 5 After editing any of the attributes of the object. Click **Save**.

Step 6 After clicking Save you receive a message explaining how these changes will affect other devices. Click **Confirm** to save the changes or **Cancel**.

Create or edit a Firepower security zone object

A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. You can define multiple zones, but a given interface can be in one zone only.

A security zone object is not associated with a device unless it is used in a rule for that device.

Service objects

ASA service objects

ASA service objects, service groups, and port groups are reusable components that contain protocols or ports considered part of the IP protocol suite. In a service object you can specify a single protocol and assign it to a source port, destination port, or both source and destination ports. A service group contains many service objects and can include a mix of protocols.

A port group is a kind of ASA service object. Port groups contain port objects that pair a service type, such as TCP or UDP, and a port number or a range of port numbers. You can then use the objects in security policies for the purposes of defining traffic matching criteria. For example, you can use them in access control rules to allow traffic to a specific range of TCP ports.

See Create and Edit ASA Service Objects for more information.

Firepower service objects

FTD service objects, service groups, and port groups are reusable components that contain protocols or ports considered part of the IP protocol suite.

FTD service groups are collections of service objects. A service group may contain objects for one or more protocols. You can use the objects and groups in security policies for purposes of defining network traffic matching criteria, for example, to use access rules to allow traffic to specific TCP ports. The system includes several pre-defined objects for common services. You can use these objects in your policies; however, you cannot edit or delete system-defined objects.

Firepower Device Manager and Firepower Management Center refer to service objects as port objects and service groups and port groups.

See Create and Edit Firepower Threat Defense Service Objects for more information.

Protocol objects

Protocol objects are a type of service object that contain less-commonly used or legacy protocols. Protocol objects are identified by a name and protocol number. Security Cloud Control recognizes these objects in ASA and Firepower (FDM-managed device) configurations and gives them their own filter of "Protocols" so you can find them easily.

See Create and Edit Firepower Threat Defense Service Objects for more information.

ICMP objects

An Internet Control Message Protocol (ICMP) object is a service object specifically for ICMP and IPv6-ICMP messages. Security Cloud Control recognizes these objects in ASA and Firepower configurations when those devices are onboarded and Security Cloud Control gives them their own filter of "ICMP" so you can find the objects easily.

Using Security Cloud Control, you can rename or remove ICMP objects from an ASA configuration. You can use Security Cloud Control to create, update, and delete ICMP and ICMPv6 objects in a Firepower configuration.

Note For the ICMPv6 protocol, AWS does not support choosing specific arguments. Only rules that allow all ICMPv6 messages are supported.

See Create and Edit Firepower Threat Defense Service Objects for more information.

Create and Edit ASA Service Objects

In a service object, you can specify a single protocol and assign it to a source port, destination port, or both source and destination ports.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click **Create Object** > **ASA** > **Service**.

Step 3 Enter an object name.

Step 4 Select **Create a service object**

Step 5 Click the **Service Type** button and select the protocol for which you want to make an object.

- **For TCP, UDP, and TCP-UDP service types,** enter a source port, destination port, or both:
  - The source port identifier allows you to match traffic originating from a particular numbered port. In the source port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
  - The destination port identifier allows you to match traffic arriving at a particular numbered port. In the destination port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
- **For Protocol service types**, enter a protocol number between 0-255, or a well-known name, such as ip, tcp, udp, gre, and so forth.

Step 6 Click **Add**.

Examples

- A service object that identifies incoming FTP traffic would be one with a TCP Service type and a destination port range of 21.
- A service object that identifies outgoing DNS and DNS over TCP traffic would be one with a tcp-udb service type and a source port equal to 53.

Create an ASA Service Group

A service group can be made up of one or more service objects representing one or more protocols.

Procedure

Step 1 Choose **Objects**.

Step 2 Choose **Create Object** > **ASA** > **Service**.

Step 3 Enter an object name.

Step 4 Select **Create a service group.**

Step 5 Add an existing object by clicking **Add Object,** selecting an object, and clicking **Select**. Repeat this step to add more objects.

Step 6 If needed, add an extra individual service type value to the service group

- **For TCP, UDP, and TCP-UDP service types,** enter a source port, destination port, or both:
  - The source port identifier allows you to match traffic originating from a particular numbered port. In the source port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
  - The destination port identifier allows you to match traffic arriving at a particular numbered port. In the destination port identifier, select an operator: equal to, range, less than, greater than, or not equal to and provide the appropriate port number or range.
- **For Protocol service types**, enter a protocol number between 0-255, or a well-known name, such as ip, tcp, udp, gre, and so forth.

Step 7 To add more individual port values, click **Add Another Value** and repeat step 6.

Step 8 Click **Add** when you are done adding service objects and service values to the service group.

Edit an ASA Service Object or Service Group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click edit .

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Create and edit Firepower service objects

To create a firepower service object, follow these steps:

Firewall Device Manager (FDM-managed) service objects are reusable components that specify a TCP/IP protocol and a port. The Firewall Device Manager, On-Premises Firewall Management Center and Cloud-Delivered Firewall Management Center refer to these objects as "Port Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click  > **FTD** > **Service**.

Step 3 Enter an object name and description.

Step 4 Select **Create a service object.**

Step 5 Click the **Service Type** button and select the protocol for which you want to create an object.

Step 6 Configure the protocol as follows:

- **TCP**, **UDP**
  - Select **eq** and then enter either a port number or a protocol name. For example, you could enter 80 as a port number or HTTP as the protocol name.
  - You can also select **range** and then enter a range of port numbers, for example, **1 65535** (to cover all ports).
- **ICMP**, **IPv6-ICMP**-Select the ICMP **Type.** Select **Any** for the type to apply to all ICMP messages. For information on the types and codes, see the following pages:
  - ICMP-http://www.iana.org/assignments/icmp-parameters/icmp-parameters.xml
  - ICMPv6-http://www.iana.org/assignments/icmpv6-parameters/icmpv6-parameters.xml
- **Other**-Select the desired protocol.

Step 7 Click **Add**.

Step 8 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Create a Firepower Service Group

A service group can be made up of one or more service objects representing one or more protocols. The service objects need to be created before they can be added to the group. The Firepower Device Manager and Firepower Management Center refer to these objects as "Port Objects."

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click > **FTD** > **Service**.

Step 3 Enter an object name and description.

Step 4 Select **Create a service group.**

Step 5 Add an object to the group by clicking **Add Object.**

- Click **Create** to create a new object as you did above in Create a Firepower Service Object above.
- Click **Choose** to add an existing service object to the group. Repeat this step to add more objects.

Step 6 Click **Add** when you are done adding service objects to the service group.

Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Edit a Firepower service object or service group

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the Actions pane, click **Edit** .

Step 4 Edit the values in the dialog box in the same fashion that you created them in the procedures above.

Step 5 Click **Save**.

Step 6 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Security group tag group

Security Group Tags

About Security Group Tags

If you use Cisco Identity Services Engine (ISE) to define and use **security group tag** (SGT) for classifying traffic in a Cisco TrustSec network, you can write access control rules that use SGT as matching criteria. Thus, you can block or allow access based on security group membership rather than IP addresses.

In ISE, you can create a SGT and assign host or network IP addresses to each tag. If you assign an SGT to a user's account, the SGT is assigned to the user's traffic. After you configure FDM-managed device to connect to an ISE server and create the SGT, you can create SGT groups in Security Cloud Control and build access control rules around them. Note that you must configure ISE's SGT Exchange Protocol (SXP) mapping before you can associate an SGT to an FDM-managed device. See **Security Group Tag Exchange Protocol** in the

Cisco Identity Services Engine Administrator Guide of the version you are currently running for more information.

When an FDM-managed device evaluates SGT as a traffic matching criteria for an access control rule, it uses the following priority:

1. The source SGT defined in the packet, if any. No destination matching is done using this technique. For the SGT to be in the packet, the switches and routers in the network must be configured to add them. See the ISE documentation for information on how to implement this method.
2. The SGT assigned to the user session, as downloaded from the ISE session directory. You need to enable the option to listen to session directory information for this kind of SGT matching, but this option is on by default when you first create the ISE identity source. The SGT can be matched to source or destination. Although not required, you would also normally set up a passive authentication identity rule, using the ISE identity source along with an AD realm, to collect user identity information.
3. The SGT-to-IP address mapping downloaded using SXP. If the IP address is within the range for an SGT, then the traffic matches the access control rule that uses the SGT. The SGT can be matched to source or destination.



Note You cannot use the information retrieved from ISE directly in an access control rule. Instead, you need to create SGT groups, which refer to the downloaded SGT information. Your SGT groups can refer to more than one SGT, so you can apply policy based on a relevant collections of tags if that is appropriate.

Version Support

Security Cloud Control currently supports SGT and SGT groups on FDM-managed devices running Version 6.5 and later. an FDM-managed device allows you to configure and connect to an ISE server in Version 6.5 and later but not does not support SGT configuration in the UI until Version 6.7.

From the FDM-managed UI, this means that an FDM-managed device running Version 6.5 or later can download SXP mappings of SGTs but cannot be manually added to objects or access control rules. To make changes to the SGTs for devices running Version 6.5 or Version 6.6, you must use the ISE UI. If the device running Version 6.5 is onboarded to Security Cloud Control, however, you can see the current SGTs associated with the device and create SGT groups.

SGT in Security Cloud Control

Security Group Tags

SGTs are read-only in Security Cloud Control. You cannot create or edit an SGT in Security Cloud Control. To create an SGT, see the Cisco Identity Services Engine Administrator Guide of the version your are currently running.

SGT Groups



Note An FDM-managed device refers to groups of SGTs as SGT dynamic objects. In Security Cloud Control, these lists of tags are currently called SGT groups. You can create an SGT group in Security Cloud Control without referring to the FDM-managed device or ISE UI.

Use SGT groups to identify source or destination addresses based on an SGT assigned by ISE. You can then use the objects in access control rules for purposes of defining traffic matching criteria. You cannot use the information retrieved from ISE directly in an access control rule. Instead, you need to create SGT groups, which refer to the downloaded SGT information.

Your SGT groups can refer to more than one SGT, so you can apply policy based on relevant collections of tags if that is appropriate.

In order to create an SGT group in Security Cloud Control, you must have at least one SGT already configured and SGT mappings from an ISE server configured for the FDM-managed console of the device you want to use. Note that if more than one FDM-managed device is associated with the same ISE server, an SGT or SGT group can be applied to more than one device. If a device is not associated with an ISE server, you cannot include SGT objects in your access control rule, or apply an SGT group to that device configuration.

SGT Groups in Rules

SGT groups can be added to access control rules; they appear as source or destination network objects.

You can create an SGT group from the Objects page. See Create an SGT Group, on page 95 for more information.

Create an SGT Group

To create an SGT group that can be used for an access control rule, use the following procedure:

Before you begin

You must have the following configurations or environments configured prior to creating a security group tag (SGT) group:

- FDM-managed device must be running at least Version 6.5.
- You must configure the ISE identity source to subscribe to SXP mappings and enable deploy changes. To manage SXP mappings, see **Configure Security Groups and SXP Publishing in ISE** of the Firepower Device Manager Configuration Guide for the version you're using, Version 6.7 and later.
- All SGTs must be created in ISE. To create an SGT, see the Cisco Identity Services Engine Configuration Guide of the version your are currently running.

Edit an SGT Group

To edit an SGT group, use the following procedure:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the SGT group you want to edit by using object filters and search field.

Step 3 Select the SGT group and click the edit icon in the **Actions** pane.

Step 4 Modify the SGT group. Edit the name, description, or the SGTs associated with the group.

Step 5 Click **Save**.

Note
You cannot create or edit SGTs in Security Cloud Control, you can only add or remove them from an SGT group. To create or edit an SGT, see the Cisco Identity Services Engine Configuration Guide of the version you are currently running.

Add an SGT Group to an Access Control Rule

To add an SGT group to an access control rule, use the following procedure:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the **FTD** tab and select the device you want to add the SGT group to.

Step 5 In the**Management** pane, select **Policy**.

Step 6 Click the blue plus button for either the **Source** or **Destination** objects and select **SGT Groups**.

Step 7 Locate the SGT group(s) you want to edit by using object filters and search field.

Step 8 Click **Save**.

Step 9 Preview and Deploy Configuration Changes for All Devices.

Note
If you need to create an additional SGT group, click **Create New Object**. Fill in the required information mentioned in Create an FTD SGT Group and **Add** the SGT group to the rule.

Syslog server objects

FDM-managed devices have a limited capacity to store events. To maximize storage for events, you can configure an external server. A system log (syslog) server object identifies a server that can receive connection-oriented or diagnostic syslog messages. If you have a syslog server set up for log collection and analysis, you can use the Security Cloud Control to create objects to define them and use the objects in the related policies.

Create and Edit Syslog Server Objects

To create a new syslog server object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the **Create Object** button .

Step 3 Select **Syslog Server** under FDM-managed device object types

Step 4 Configure the syslog server object properties:

- **IP Address**—Enter the IP address of the syslog server.
- **Protocol Type**—Select the protocol that your syslog server uses to receive messages. If you select TCP, the system can recognize when the syslog server is not available, and stops sending events until the server is available again.
- **Port Number**—Enter a valid port number to use for syslog. If your syslog server uses default ports, enter 514 as the default UDP port or 1470 as the default TCP port. If the server does not use default ports, enter the correct port number. The port must be in the range 1025 to 65535.
- **Select an interface**—Select which interface should be used for sending diagnostic syslog messages. Connection and intrusion events always use the management interface. Your interface selection determines the IP address associated with syslog messages. Note that you can only select **one** of the options listed below. You cannot select both. Select one of the following options:
  - **Data Interface**—Use the data interface you select for diagnostic syslog messages. Select an interface from the generated list. If the server is accessible through a bridge group member interface, select the bridge group interface (BVI). If it is accessible through the Diagnostic interface (the physical management interface), we recommend that you select Management Interface instead of this option. You cannot select a passive interface. For connection and intrusion syslog messages, the source IP address will either be for the management interface, or for the gateway interface if you route through data interfaces.
  - **Management Interface**—Use the virtual management interface for all types of syslog messages. The source IP address will either be for the management interface, or for the gateway interface if you route through data interfaces.

Step 5 Click **Add**.

Step 6 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit Syslog Server Objects

To edit an existing syslog server object, follow these steps:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the desired syslog server object and select it. You can **filter** the object list by the syslog server object type.

Step 3 In the Actions pane, click **Edit**.

Step 4 Make the desired edits and click **Save**.

Step 5 Confirm the changes you made.

Step 6 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create a Syslog Server Object for Secure Logging Analytics (SaaS)

Create a syslog server object with the IP address, TCP port, or UDP port of the Secure Event Connector (SEC) you want to send events to. You would create one syslog object for every SEC that you have onboarded to your tenant but you would only send events from one rule to one syslog object representing one SEC.

Procedure

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the **Create Object** button .

Step 3 Select **Syslog Server** under FDM-managed device object types.

Step 4 Configure the syslog server object properties. To find these properties of the SEC, from the navigation pane on the left, choose **Tools & Services** > **Secure Connectors**. Then select the Secure Event Connector you want to configure the syslog object for and look in the Details pane on the right.

- **IP Address**—Enter the IP address of the SEC.
- **Protocol Type**—Select TCP or UDP.
- **Port Number**—Enter port 10125 if you selected TCP or 10025 if you selected UDP.
- **Select an interface**—Select the interface configured to reach the SEC.

Note

FDM-managed device supports one syslog object per IP address so you will have to choose between using TCP and UDP.

Step 5 Click **Add**.

ASA time range objects

A time range object defines a specific time that consists of a start time, an end time, and optional recurring entries. You use time range objects in network policies to provide time-based access to features or assets. Creating a time range object does not restrict access to the device. The configured times are local to the device.

You can add absolute or recurring time ranges to a time range object. Recurring ranges are periodic time ranges.

Note If a time range has both absolute and periodic values, Security Cloud Control evaluates the periodic values only after the absolute start time is reached and stops evaluating them after the absolute end time is reached.

Create an ASA time range object

Use the following procedure to create a time range object for an ASA device:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click + > **ASA** > **Time Range**.

Step 3 Enter an object name.

Step 4 Define a time range.

- Absolute Time Range: Enter a start time and an end time. A time range object can have only one absolute time range.
- Recurring Time Ranges: Click the + icon to add a periodic time range that repeats during the week. Select the frequency, days of the week, start time, and end time. A time range object can have multiple periodic ranges.

Note
Start and end times are optional. If no start time is configured, the time range starts immediately. If no end time is configured, the time range lasts indefinitely.

Step 5 Click **Add** to create the object.

Edit an ASA time range object

Use the following procedure to edit a time range object for an ASA device:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter the objects to find the object you want to edit and then select the object in the object table.

Step 3 In the details pane, click edit .

Step 4 Edit the values as needed and click **Save**.

Step 5 If the object is currently used by any policies, Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 6 If the object is used in a policy on a device, review and deploy now the changes you made, or wait and deploy multiple changes at once.

Troubleshooting Objects

Resolve Duplicate Object Issues

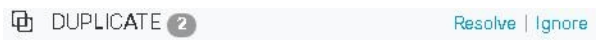
Duplicate objects are two or more objects on the same device with different names but the same values. These objects are usually created accidentally, serve similar purposes, and are used by different policies. After resolving duplicate object issues, Security Cloud Control updates all affected object references with the retained object name.

To resolve duplicate object issues:

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select one of the results. In the objects details panel, you will see the DUPLICATE field with the number of duplicates affected:



Step 3 Click **Resolve**. Security Cloud Control displays the duplicate objects for you to compare.

Step 4 Select two of the objects to compare.

Step 5 You now have these options:

- If you want to replace one of the objects with the other, click **Pick** for the object you to keep, click **Resolve** to see what devices and network policies will be affected, and then click **Confirm** if you are satisfied with the changes. Security Cloud Control keeps the object you selected as the replacement and deletes the duplicate.

- If you have an object in the list that you want to ignore, click **Ignore**. If you ignore an object, it will be removed from the list of duplicate objects that Security Cloud Control shows you.
- Click **Ignore All** if you want to keep the object but do not want Security Cloud Control to find it in a search for duplicate objects.

Step 6 Once the duplicate object issue has been resolved review and deploy the changes you made now, or wait and deploy multiple changes at once.

Resolving Inconsistent or Unused Security Zone Objects

Security zone objects can be marked inconsistent or unused like other objects. See Resolve Unused Object Issues and Resolve Inconsistent Object Issues for instructions on how to resolve these issues.

Resolve Unused Object Issues

Unused objects are objects that exist in a device configuration but are not referenced by another object, an access-list, or a NAT rule.

Resolve an Unused Object Issue

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select one or more unused objects.

Step 3 You now have these options:

- In the Actions pane, click **Remove** to remove the unused object from Security Cloud Control.
- In the Issues pane, click **Ignore.** If you ignore an object, Security Cloud Control will stop displaying it among the results of unused objects objects.

Step 4 If you removed the unused object, Preview and deploy configuration changes for all devices, on page 597 the changes you made now, or wait and deploy multiple changes at once.

Note
To resolve unused object issues in bulk, see Resolve Object Issues in Bulk.

Remove Unused Objects in Bulk

Procedure

Step 1 In the left pane, click **Objects** and choose an option.

Step 2 Select the unused objects you want to delete:

- Click the checkbox in the object table header row to select all the objects on the page.
- Select individual unused objects in the object table.

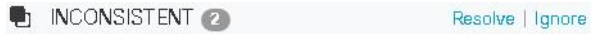
Step 3 In the Actions pane on the right, click **Remove** to remove all the unused objects you selected in Security Cloud Control. You can remove 99 objects at a time.

Step 4 Click **OK** to confirm you want to delete the unused objects.

Step 5 You have two choices to deploy these changes:

- Review and deploy the changes you made now, or wait and deploy multiple changes at once.
- Open the **Security Devices** page and find the devices that were affected by the change. Select all the devices affected by the change and, in the **Management** pane, click **Deploy All**. Read the warning and take the appropriate action.

Resolve Inconsistent Object Issues

Inconsistent objects 

are objects with the same name, but different values, on two or more devices. Sometimes users create objects in different configurations with the same name and content, but over time the values of these objects diverge, which creates the inconsistency.

Note: To resolve inconsistent object issues in bulk, see Resolve Object Issues in Bulk.

You can perform the following on inconsistent objects:

- **Ignore:** Security Cloud Control ignores the inconsistency between objects and retains their values. The objects will no longer be listed under the inconsistency category.
- **Merge:** Security Cloud Control combines all selected objects and their values into a single object group.
- **Rename:** Security Cloud Control allows you to rename one of the inconsistent objects and give it a new name.
- **Convert Shared Network Objects to Overrides:** Security Cloud Control allows you to combine inconsistent shared objects (with or without overrides) into a single shared object with overrides. The most common default value from the inconsistent objects is set as a default in the newly formed object.

Note If there are multiple common default values, one of them is selected as the default. The remaining default values and override values are set as overrides of that object.

- **Convert Shared Network Group to Additional Values:** - Security Cloud Control allows you to combine inconsistent shared network groups into a single shared network group with additional values. The criteria for this functionality is that the inconsistent network groups to be converted must have a minimum of one common object with the same value. All default values that match this criterion becomes the default values, and the remaining objects are assigned as additional values of the newly formed network group.

  For example, consider two inconsistent shared network groups. The first network group 'shared_network_group' is formed with 'object_1' (192.0.2.x) and 'object_2' (192.0.2.y). It also contains additional value 'object_3' (192.0.2.a). The second network group 'shared_network_group' is formed with 'object_1' (192.0.2.x) and additional value 'object_4' (192.0.2.b). On converting the shared network group to additional values, the newly formed group 'shared_network_group' contain 'object_1' (192.0.2.x) and 'object_2' (192.0.2.y)' as default values and 'object_3' (192.0.2.a) and 'object_4' (192.0.2.b) as additional values.

Note When you create a new network object, Security Cloud Control auto assigns its value as an override to an existing shared network object with the same name. This is also applicable when a new device is onboarded to Security Cloud Control.

The auto-assignment happens only when the following criteria are met:

1. The new network object must be assigned to a device.
2. Only one shared object with the same name and type must be existing in the tenant.
3. The shared object must already contain overrides.

To resolve inconsistent object issues:

Procedure

Step 1 In the Security Cloud Control navigation bar on the left, click **Objects** and choose an option.

Step 2 Select an inconsistent object. In the objects details panel, you will see the INCONSISTENT field with the number of objects affected:



Step 3 Click **Resolve**. Security Cloud Control displays inconsistent objects for you to compare.

Step 4 You now have these options:

- **Ignore All:**
  a. Compare the objects presented to you and on one of the objects, click **Ignore**. Or, to ignore all objects, click **Ignore All**.
  b. Click **OK** to confirm.
- **Resolve by merging objects:**
  a. Click **Resolve by Merging X Objects**.
  b. Click **Confirm**.

- **Rename:**
  a. Click **Rename**.
  b. Save your changes to affected network policies and devices and click **Confirm**.
- **Convert to Overrides (for inconsistent shared objects):** When comparing shared objects with overrides, the comparison panel shows only the default values in the **Inconsistent Values** field.
  a. Click **Convert to Overrides**. All inconsistent objects will be converted to a single shared object with overrides.
  b. Click **Confirm**. You can click **Edit Shared Object** to view the details of the newly formed object. You can use up and down arrows to move the values between default and override.
- **Convert to Additional Values (for inconsistent network groups):**
  a. Click **Convert to Additional Values**. All inconsistent objects will be converted to a single shared object with additional values.
  b. Save your changes to affected network policies and devices and click **Confirm**.

Step 5 After resolving the inconsistencies, review and deploy now the changes you made, or wait and deploy multiple changes at once.

Resolve Object Issues in Bulk

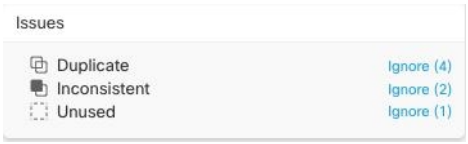
Important If the object becomes associated with another issue type at a later time, the ignore action you committed only affects the issues you selected at that time. For example, if you ignored an object because it was a duplicate and the object is later marked inconsistent, ignoring it as a duplicate object does not mean it will be ignored as an inconsistent object.

To ignore issues in bulk, follow this procedure:

Procedure

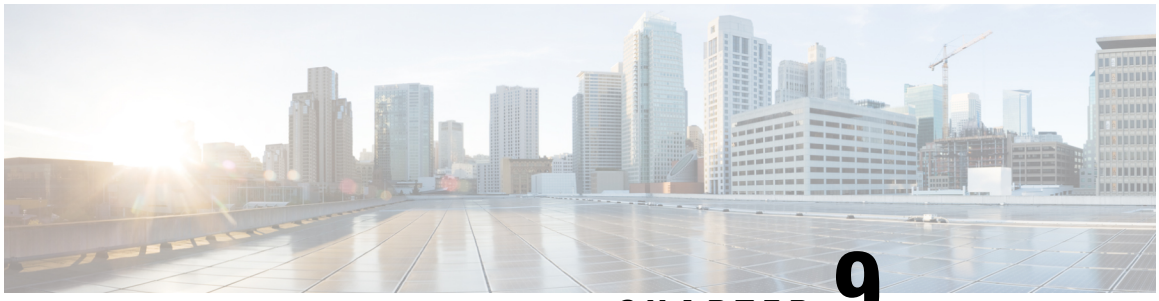
Step 1 In the left pane, click **Objects** and choose an option.

Step 2 In the Object table, select all the applicable objects you want to ignore. The Issues pane groups objects by issue type.



Step 3 Click **Ignore** to ignore issues by type. You must **Ignore** each issue type separately.

Step 4 Click **OK** to confirm you want to ignore those objects.



CHAPTER 9

Configure Secure Firewall ASA Devices

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- ASA interface configuration, on page 316
- ASA system settings policy in Security Cloud Control Firewall Management, on page 329
- ASA routing in Security Cloud Control Firewall Management, on page 340
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Update ASA connection credentials in Security Cloud Control Firewall Management

In the process of onboarding an ASA, you entered the username and password Security Cloud Control Firewall Management must use to connect to the device. If those credentials are changed on the device, use the **Update Credentials** device action to update those credentials on Security Cloud Control Firewall Management as well. This feature allows you to update the credentials on Security Cloud Control Firewall Management without having to re-onboard the device. The username and password combination you switch to must already exist on the ASA or Authentication, Authorization, and Accounting (AAA) server for that user. This process

only affects the Security Cloud Control Firewall Management database; no changes to the ASA configuration are made when using the Update Credentials feature.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab and then click **ASA**.

Step 3 Select the ASAs whose connection credentials it is you want to update. You can update the credentials on one or multiple ASAs at once.

Step 4 In the **Device Actions** pane, click **Update Credentials**.

Step 5 Select the Cloud Connector or the Secure Device Connector (SDC) you use to connect the ASA(s) to Security Cloud Control.

Step 6 Enter the new username and password you want to use to connect to the ASAs.

Step 7 After the credentials are changed, Security Cloud Control syncs the device.

Note
If Security Cloud Control Firewall Management fails to sync the device, the connectivity status in Security Cloud Control Firewall Management may show "Invalid Credentials." If that's the case, you may have tried to use an invalid username and password combination. Make sure the credentials you want to use are stored on your ASA or AAA server, and try again.

Move an ASA from one SDC to Another

Procedure

Step 1 In the left pane, click **Security Devices**

Step 2 In the left pane, click **Inventory**.

Step 3 Select the ASAs you want to move to the other SDC.

Step 4 In the Device Actions pane, click **Update Credentials**.

Step 5 Click the Secure Device Connector button and select the SDC you want to move the device to.

Step 6 Enter the administrator username and password you used to onboard the ASA, and click Update. You do not have to deploy these changes to the device.

ASA interface configuration

Security Cloud Control Firewall Management simplifies ASA interface configuration by providing a user-friendly interface that eliminates the need to use the command line interface. You have complete control over configuring the ASA's physical interfaces, subinterfaces, and EtherChannels. Moreover, you can also view Virtual Tunnel Interfaces that are created during route-based site-to-site VPN, but they are read-only.

You can use Security Cloud Control Firewall Management to configure and edit data interfaces or the management/diagnostic interface on an ASA device.

When you attach a cable to an interface connection (physically or virtually), you need to configure the interface. At minimum, you need to name the interface and enable it for traffic to pass through it. If the interface is a member of a bridge group, naming the interface is sufficient. If the interface is a bridge virtual interface (BVI), you need to assign the BVI an IP address. If you intend to create VLAN subinterfaces rather than a single physical interface on a given port, you would typically configure the IP addresses on the subinterface, not on the physical interface. VLAN subinterfaces let you divide a physical interface into multiple logical interfaces that are tagged with different VLAN IDs.

The interface list shows the available interfaces, their names, addresses, and states. You can change the state of an interface, on or off, or edit an interface, by selecting the interface row and clicking **Edit** in the Actions pane. The list shows the interface characteristics based on your configuration. Expand an interface row to see subinterfaces or bridge group member.

Management interface

You can manage the ASA by connecting to:

- Any through-traffic interface
- A dedicated Management Slot/Port interface (if available for your model)

Use MTU settings

The MTU specifies the maximum frame payload size that the device can transmit on a given Ethernet interface. The MTU value is the frame size without Ethernet headers, VLAN tagging, or other overhead. For example, when you set the MTU to 1500, the expected frame size is 1518 bytes including the headers, or 1522 when using VLAN. Do not set the MTU value higher to accommodate these headers.

Read-only support for Virtual Tunnel Interface (VTI)

Configuring a route based site-to-site VPN tunnel between two ASA devices creates a Virtual Tunnel Interface (VTI) between the devices. Devices with configured VTI tunnels can be onboarded to Security Cloud Control Firewall Management, which discovers and lists them on the **ASA Interfaces** page but doesn't support their management.

Configure an ASA Physical Interface

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 In the left pane, click **Inventory**.

Step 3 Click the **ASA** tab.

Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.

Step 5 Click a physical interface that you want to configure, and click **Edit**.

The **Editing Physical Interface** dialog box appears.

Step 6 In the **Logical Name** field, enter a name for the interface.

Step 7 Continue with one of the following procedures:

- Configure IPv4 Addressing for the Physical Interface if you intend to assign an IPv4 address to this interface.
- Configure IPv6 Addressing for ASA Physical Interface, on page 319 if you intend to assign an IPv6 address to this interface.
- Configure Advanced ASA Physical Interface Options. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.
- If you saved the interface, and you don't want to continue advanced interface options, continue to Enable the Physical Interface.

Configure IPv4 Addressing for ASA Physical Interface

Procedure

Step 1 In the **Edit Physical Interface** dialog box, configure the following in the **IPv4 Address** tab:

- **Type**: You can use either static IP addressing or DHCP for the interface.

  Static - Choose this option if you want to assign an address that should not change.

  - **IP Address and Subnet Mask**: Enter the interface's IP address and the subnet mask for the network attached to the interface.
  - **Standby IP Address**: If you configured high availability and are monitoring this interface for HA, also configure a standby IP address on the same subnet. This interface on the standby device uses the standby address.

    For each interface, set a standby IP address. Although recommended, the standby address is not required. Without a standby IP address, the active unit cannot perform network tests to check the standby interface health; it can only track the link state.

  DHCP: Choose this option if the address should be obtained from the DHCP server on the network.

  You can check the **Obtain Default Route** check box to get the default route from the DHCP server. You would normally check this option.

Step 2 Click **Save** if you are done or continue with one of these procedures.

- Configure IPv6 Addressing for ASA Physical Interface, on page 319 if you intend to assign an IPv6 address to this interface.
- Configure Advanced ASA Physical Interface Options. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.

- If you saved the interface, and you don't want to continue advanced interface options, continue to Enable the Physical Interface.

Configure IPv6 Addressing for ASA Physical Interface

Procedure

Step 1 In the **Editing Physical Interface** dialog box, click the **IPv6 Address** tab.

Step 2 Configure the following:

- **State**: To enable IPv6 processing and to automatically configure the link-local address when you do not configure the global address, click the **State** slider to enable it. The link-local address is generated based on the interface MAC addresses (Modified EUI-64 format).

  Note
  Disabling IPv6 does not disable IPv6 processing on an interface that is configured with an explicit IPv6 address or that is enabled for auto configuration.

- **Address Auto Configuration**:

  Check this option to have the address automatically configured. IPv6 stateless autoconfiguration will generate a global IPv6 address only if the link on which the device resides has a router configured to provide IPv6 services, including the advertisement of an IPv6 global prefix for use on the link. If IPv6 routing services are not available on the link, you will get a link-local IPv6 address only, which you cannot access outside of the device's immediate network link. The link local address is based on the Modified EUI-64 interface ID.

  Although RFC 4862 specifies that hosts configured for stateless autoconfiguration do not send Router Advertisement messages, the device does send Router Advertisement messages in this case. Select **Suppress RA** to suppress messages and conform to the RFC.

- **Suppress RA**: Check this box if you want to suppress router advertisements. The device can participate in router advertisements so that neighboring devices can dynamically learn a default router address. By default, router advertisement messages (ICMPv6 Type 134) are periodically sent out each IPv6 configured interface.

  Router advertisements are also sent in response to router solicitation messages (ICMPv6 Type 133). Router solicitation messages are sent by hosts at system startup so that the host can immediately autoconfigure without needing to wait for the next scheduled router advertisement message.

  You might want to suppress these messages on any interface for which you do not want the device to supply the IPv6 prefix (for example, the outside interface).

- **DAD Attempts**: How often the interface performs Duplicate Address Detection (DAD), from 0 - 600. The default is 1. During the stateless auto configuration process, DAD verifies the uniqueness of new unicast IPv6 addresses before the addresses are assigned to interfaces. If the duplicate address is the link-local address of the interface, the processing of IPv6 packets is disabled on the interface. If the duplicate address is a global address, the address is not used. The interface uses neighbor solicitation messages to perform Duplicate Address Detection. Set the value to 0 to disable duplicate address detection (DAD) processing.

- **Link-Local Address**: If you want to use the address as link local only, enter it in the Link-Local Address field. Link local addresses are not accessible outside the local network. You cannot configure a link-local address on a bridge group interface.

  Note
  A link-local address should start with FE8, FE9, FEA, or FEB, for example fe80::20d:88ff:feee:6a82. Note that we recommend automatically assigning the link-local address based on the Modified EUI-64 format. For example, if other devices enforce the use of the Modified EUI-64 format, then a manually-assigned link-local address may cause packets to be dropped.

- **Standby Link-Local Address**: Configure this address if the interface connects a high availability pair of devices. Enter the link-local address of the interface on the other device, to which this interface is connected.
- **Static Address/Prefix**: If you do not use stateless autoconfiguration, enter the full static global IPv6 address and network prefix. For example, 2001:0DB8::BA98:0:3210/48. You can add another static address.
- **Standby IP Address**: If you configure high availability, and you are monitoring this interface for HA, also configure a standby IPv6 address on the same subnet. The standby address is used by this interface on the standby device. If you do not set the standby IP address, the active unit cannot monitor the standby interface using network tests; it can only track the link state.

Step 3 Click **Save** if you are done or continue with one of these procedures.

- Configure Advanced ASA Physical Interface Options. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.
- If you saved the interface, and you don't want to continue advanced interface options, continue to Enable the Physical Interface.

Configure Advanced ASA Physical Interface Options

Advanced interface options have default settings that are appropriate for most networks. Configure them only if you are resolving networking problems.

The following procedure assumes the interface is already defined. You can also edit these settings while initially editing or creating the interface.

This procedure and all of the steps in it are optional.

Procedure

Step 1 In the **Editing Physical Interface** dialog box, click the **Advanced** tab.

Step 2 Configure the following advanced settings:

- **HA Monitoring**: Enable to include the health of the interface as a factor when the HA pair decides whether to fail over to the peer unit in a high availability configuration. This option is ignored if you do not configure high availability. It is also ignored if you do not configure a name for the interface.
- **Management Only**: Enable to make a data interface management only.

A management only interface does not allow through traffic, so there is very little value in setting a data interface as a **management only** interface. You cannot change this setting for the Management/Diagnostic interface, which is always management only.

- **MTU**: The default MTU is 1500 bytes. You can specify a value from 64 - 9198. Set a high value if you typically see jumbo frames on your network.
- **Duplex and Speed (Mbps)**: The default is that the interface negotiates the best duplex and speed with the interface at the other end of the wire, but you can force a specific duplex or speed if necessary. The options listed are only those supported by the interface. Before setting these options for interfaces on a network module, please read Limitations for Interface Configuration.
  - **Duplex**: Choose Auto, Half, or Full. Auto is the default when the interface supports it.
  - **Speed**: Choose Auto to have the interface negotiate the speed (this is the default), or pick a specific speed: 10, 100, 1000, 10000 Mbps. You can also select these special options:
- **DAD Attempts**: How often the interface performs Duplicate Address Detection (DAD), from 0 - 600. The default is 1. During the stateless auto configuration process, DAD verifies the uniqueness of new unicast IPv6 addresses before the addresses are assigned to interfaces. If the duplicate address is the link-local address of the interface, the processing of IPv6 packets is disabled on the interface. If the duplicate address is a global address, the address is not used. The interface uses neighbor solicitation messages to perform Duplicate Address Detection. Set the value to 0 to disable duplicate address detection (DAD) processing.
- **MAC Address**: The Media Access Control in H.H.H format, where H is a 16-bit hexadecimal digit. For example, you would enter the MAC address 00-0C-F1-42-4C-DE as 000C.F142.4CDE. The MAC address must not have the multicast bit set, that is, the second hexadecimal digit from the left cannot be an odd number.)
- **Standby MAC Address**: For use with high availability. If the active unit fails over and the standby unit becomes active, the new active unit starts using the active MAC addresses to minimize network disruption, while the old active unit uses the standby address.

Step 3 If you saved the interface, and you don't want to continue advanced interface options, continue to Enable the Interface.

Step 4 Click **Save**.

Enable the ASA Physical Interface

Procedure

Step 1 Select the physical interface you want to enable.

Step 2 Move the **State** slider at the top right of the window associated with the interface's logical name.

Step 3 Review and deploy the changes you made.

Add an ASA VLAN Subinterface

VLAN subinterfaces let you divide a physical interface into multiple logical interfaces that are tagged with different VLAN IDs. An interface with one or more VLAN subinterfaces is automatically configured as an 802.1Q trunk. Because VLANs allow you to keep traffic separate on a given physical interface, you can increase the number of interfaces available to your network without adding additional physical interfaces or devices.

Create subinterfaces if you attach the physical interface to a trunk port on a switch. Create a subinterface for each VLAN that can appear on the switch trunk port. If you attach the physical interface to an access port on the switch, there is no point in creating a subinterface.

- Configure ASA VLAN Subinterfaces

  Configure IPv4 Addressing for ASA Subinterface, on page 323
- Configure IPv6 Addressing for ASA Subinterface, on page 323
- Configure Advanced ASA Subinterface Options, on page 325
- Enable the Subinterface, on page 326

Configure ASA VLAN Subinterfaces

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 In the left pane, click **Inventory**.

Step 3 Click the **ASA** tab.

Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.

Step 5 You can add a subinterface using one of the following methods:

- Choose  > **Subinterface**
- Click a physical interface that you want to configure and in the **Actions** pane on the right, click **New Subinterface**.

Step 6 In the **VLAN ID** field, enter the VLAN ID between 1 and 4094.

Some VLAN IDs might be reserved on connected switches, so check the switch documentation for more information. For multiple context mode, you can only set the VLAN in the system configuration.

Step 7 In the **Subinterface ID** field, enter the subinterface ID as an integer between 1 and 4294967293.

The number of subinterfaces allowed depends on your platform. You cannot change the ID after you set it.

Step 8 Continue with one of the following procedures:

- Configure IPv4 Address for the subinterface if you intend to assign an IPv4 address to this interface.
- Configure IPv6 Address for the subinterface if you intend to assign an IPv6 address to this interface.
- Configure Advanced ASA subinterface. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.

- If you saved the subinterface, and you don't want to continue advanced subinterface options, continue to Enable the Subinterface.

Configure IPv4 Addressing for ASA Subinterface

Procedure

Step 1 In the **Creating Subinterface** dialog box, configure the following in the **IPv4 Address** tab:

- **Type**: You can use either static IP addressing or DHCP for the interface.

  Static - Choose this option if you want to assign an address that should not change.

  - **IP Address and Subnet Mask**: Enter the interface's IP address and the subnet mask for the network attached to the interface.
  - **Standby IP Address**: If you configured high availability and are monitoring this interface for HA, also configure a standby IP address on the same subnet. This interface on the standby device uses the standby address.

    For each interface, set a standby IP address. Although recommended, the standby address is not required. Without a standby IP address, the active unit cannot perform network tests to check the standby interface health; it can only track the link state.

  DHCP: Choose this option if the address should be obtained from the DHCP server on the network.

  You can check the **Obtain Default Route** check box to get the default route from the DHCP server. You would normally check this option.

Step 2 Click **Save** if you are done or continue with one of these procedures.

- Configure IPv6 Address for the subinterface if you intend to assign an IPv6 address to this interface.
- Configure Advanced ASA subinterface. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.
- If you saved the subinterface, and you don't want to continue advanced subinterface options, continue to Enable the subinterface.

Configure IPv6 Addressing for ASA Subinterface

Procedure

Step 1 In the **Creating Subinterface** dialog box, click the **IPv6 Address** tab.

Step 2 Configure the following:

- **State**: To enable IPv6 processing and to automatically configure the link-local address when you do not configure the global address, click the **State** slider to enable it. The link-local address is generated based on the interface MAC addresses (Modified EUI-64 format).

  Note
  Disabling IPv6 does not disable IPv6 processing on an interface that is configured with an explicit IPv6 address or that is enabled for auto configuration.

- **Address Auto Configuration**:

  Check this option to have the address automatically configured. IPv6 stateless autoconfiguration will generate a global IPv6 address only if the link on which the device resides has a router configured to provide IPv6 services, including the advertisement of an IPv6 global prefix for use on the link. If IPv6 routing services are not available on the link, you will get a link-local IPv6 address only, which you cannot access outside of the device's immediate network link. The link local address is based on the Modified EUI-64 interface ID.

  Although RFC 4862 specifies that hosts configured for stateless autoconfiguration do not send Router Advertisement messages, the device does send Router Advertisement messages in this case. Select **Suppress RA** to suppress messages and conform to the RFC.

- **Suppress RA**: Check this box if you want to suppress router advertisements. The device can participate in router advertisements so that neighboring devices can dynamically learn a default router address. By default, router advertisement messages (ICMPv6 Type 134) are periodically sent out each IPv6 configured interface.

  Router advertisements are also sent in response to router solicitation messages (ICMPv6 Type 133). Router solicitation messages are sent by hosts at system startup so that the host can immediately autoconfigure without needing to wait for the next scheduled router advertisement message.

  You might want to suppress these messages on any interface for which you do not want the device to supply the IPv6 prefix (for example, the outside interface).

- **DAD Attempts** How often the interface performs Duplicate Address Detection (DAD), from 0 - 600. The default is 1. During the stateless auto configuration process, DAD verifies the uniqueness of new unicast IPv6 addresses before the addresses are assigned to interfaces. If the duplicate address is the link-local address of the interface, the processing of IPv6 packets is disabled on the interface. If the duplicate address is a global address, the address is not used. The interface uses neighbor solicitation messages to perform Duplicate Address Detection. Set the value to 0 to disable duplicate address detection (DAD) processing.

- **Link-Local Address**: If you want to use the address as link local only, enter it in the Link-Local Address field. Link local addresses are not accessible outside the local network. You cannot configure a link-local address on a bridge group interface.

  Note
  A link-local address should start with FE8, FE9, FEA, or FEB, for example fe80::20d:88ff:feee:6a82. Note that we recommend automatically assigning the link-local address based on the Modified EUI-64 format. For example, if other devices enforce the use of the Modified EUI-64 format, then a manually-assigned link-local address may cause packets to be dropped.

- **Standby Link-Local Address**: Configure this address if the interface connects a high availability pair of devices. Enter the link-local address of the interface on the other device, to which this interface is connected.

- **Static Address/Prefix**: If you do not use stateless autoconfiguration, enter the full static global IPv6 address and network prefix. For example, 2001:0DB8::BA98:0:3210/48. You can add another static address.
- **Standby IP Address**: If you configure high availability, and you are monitoring this interface for HA, also configure a standby IPv6 address on the same subnet. The standby address is used by this interface on the standby device. If you do not set the standby IP address, the active unit cannot monitor the standby interface using network tests; it can only track the link state.

Step 3 Click **Save** if you are done or continue with one of these procedures.

- Configure Advanced ASA subinterface. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.
- If you saved the subinterface, and you don't want to continue advanced subinterface options, continue to Enable the Subinterface.

Configure Advanced ASA Subinterface Options

Advanced interface options have default settings that are appropriate for most networks. Configure them only if you are resolving networking problems.

The following procedure assumes the interface is already defined. You can also edit these settings while initially editing or creating the interface.

This procedure and all of the steps in it are optional.

Procedure

Step 1 In the **Creating Subinterface** dialog box, click the **Advanced** tab.

Step 2 Configure the following advanced settings:

- **HA Monitoring**: Enable to include the health of the interface as a factor when the HA pair decides whether to fail over to the peer unit in a high availability configuration. This option is ignored if you do not configure high availability. It is also ignored if you do not configure a name for the interface.
- **Management Only**: Enable to make a data interface management only.

  A management only interface does not allow through traffic, so there is very little value in setting a data interface as a **management only** interface. You cannot change this setting for the Management/Diagnostic interface, which is always management only.
- **MTU**: The default MTU is 1500 bytes. You can specify a value from 64 - 9198. Set a high value if you typically see jumbo frames on your network.
- **DAD Attempts**: How often the interface performs Duplicate Address Detection (DAD), from 0 - 600. The default is 1. During the stateless auto configuration process, DAD verifies the uniqueness of new unicast IPv6 addresses before the addresses are assigned to interfaces. If the duplicate address is the link-local address of the interface, the processing of IPv6 packets is disabled on the interface. If the duplicate address is a global address, the address is not used. The interface uses neighbor solicitation

messages to perform Duplicate Address Detection. Set the value to 0 to disable duplicate address detection (DAD) processing.

- **MAC Address**: The Media Access Control in H.H.H format, where H is a 16-bit hexadecimal digit. For example, you would enter the MAC address 00-0C-F1-42-4C-DE as 000C.F142.4CDE. The MAC address must not have the multicast bit set, that is, the second hexadecimal digit from the left cannot be an odd number.)
- **Standby MAC Address**: For use with high availability. If the active unit fails over and the standby unit becomes active, the new active unit starts using the active MAC addresses to minimize network disruption, while the old active unit uses the standby address.

Step 3 If you saved the interface, and you don't want to continue advanced interface options, continue to Enable the Subinterface.

Step 4 Click **Save**.

Enable the Subinterface

Procedure

Step 1 Select the subinterface you want to enable.

Step 2 Move the **State** slider at the top right of the window associated with the interface's logical name.

Step 3 Review and deploy the changes you made.

Remove ASA Subinterface

Use the following procedure to remove an subinterface from ASA.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 In the left pane, click **Inventory**.

Step 3 Click the **ASA** tab.

Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.

Step 5 On the **Interfaces** page, expand the physical interface linked with the subinterface you want to delete and then select that specific subinterface.

Step 6 In the **Actions** pane located to the right, click **Remove**.

Step 7 Confirm you want to delete the EtherChannel interface and click **Delete**.

Step 8 Review and deploy the changes you made.

About ASA EtherChannel Interfaces

An 802.3ad EtherChannel is a logical interface (called a port-channel interface) consisting of a bundle of individual Ethernet links (a channel group) so that you increase the bandwidth for a single network. A port channel interface is used in the same way as a physical interface when you configure interface-related features.

You can configure up to 48 EtherChannels, depending on how many interfaces your model supports.

Link Aggregation Control Protocol

The Link Aggregation Control Protocol (LACP) aggregates interfaces by exchanging the Link Aggregation Control Protocol Data Units (LACPDUs) between two network devices.

LACP coordinates the automatic addition and deletion of links to the EtherChannel without user intervention. It also handles misconfigurations and checks that both ends of member interfaces are connected to the correct channel group. “On” mode cannot use standby interfaces in the channel group when an interface goes down, and the connectivity and configurations are not checked.

See the **EtherChannel and Redundant Interfaces** chapter of ASDM Book 1: Cisco ASA Series General Operations ASDM Configuration Guide, X, Y for more information on ASA EtherChannel interfaces.

Configure ASA EtherChannel

Use this procedure to add a new EtherChannel interface to an ASA.

Before you begin

To configure EtherChannel on ASA interface, the following prerequisites must be met:

- All interfaces in the channel group must be the same media type and capacity, and must be set to the same speed and duplex. The media type can be either RJ-45 or SFP; SFPs of different types (copper and fiber) can be mixed. You cannot mix interface capacities (for example 1GB and 10GB interfaces) by setting the speed to be lower on the larger-capacity interface, except for the Secure Firewall 3100, which supports different interface capacities as long as the speed is set to Detect SFP; in this case, the lowest common speed is used.
- You cannot add a physical interface to the channel group if you configured a name for it. You must first remove the name.
- You cannot add an interface part of another EtherChannel interface group, Switchport interfaces, and interfaces with subinterfaces.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 In the left pane, click **Inventory**.

Step 3 Click the **ASA** tab.

Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.

Step 5 Choose  > **EtherChannel Interface**.

Step 6 In the **Logical Name** field, provide a name for the EtherChannel interface.

Step 7 In the **EtherChannel ID**, enter an integer between 1 and 8.

Step 8 Click the drop-down button for **Link Aggregation Control Protocol** and select one of the two options:

- **Active** —Sends and receives LACP updates. An active EtherChannel can establish connectivity with either an active or a passive EtherChannel. You should use the active mode unless you need to minimize the amount of LACP traffic.
- **On**— The EtherChannel is always on, and LACP is not used. An **on** EtherChannel can only establish a connection with another EtherChannel that is also configured to be **on**.

Step 9 Search for and select the interfaces you want to include in the EtherChannel as members. You **must** include at least one interface.

Warning
If you add an EtherChannel interface as a member and it already has an IP address configured, Security Cloud Control removes the IP address of the member.

Step 10 Select the **IPv4**, **IPv6**, or **Advanced** tab to configure the IP address of the subinterface.

- Configure IPv4 Addressing for ASA EtherChannel Interface if you intend to assign an IPv4 address to this interface.
- Configure IPv6 Addressing for ASA EtherChannel Interface if you intend to assign an IPv6 address to this interface.
- Configure Advanced ASA EtherChannel Interface Options. The advanced settings have defaults that are appropriate for most networks. Edit them only if you are resolving network issues.

Step 11 Move the **State** slider at the top right of the window to enable the EtherChannel interface.

Step 12 Click **Save**.

Step 13 Review and deploy the changes you made.

Edit ASA EtherChannel

Use this procedure to edit an existing EtherChannel on ASA.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 In the left pane, click **Inventory**.

Step 3 Click the **ASA** tab.

Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.

Step 5 On the **Interfaces** page, select the EtherChannel interface you want to edit.

Step 6 In the **Actions** pane located to the right, click **Edit**.

Step 7 Modify the values you want and click **Save**.

Step 8 Review and deploy the changes you made.

Remove ASA EtherChannel Interface

Use the following procedure to remove an EtherChannel interface from ASA.

Procedure

Step 1 In the left pane, click **Security Devices**.
Step 2 In the left pane, click **Inventory**.
Step 3 Click the **ASA** tab.
Step 4 Select the device you want to modify, and in the **Management** pane on the right, click **Interfaces**.
Step 5 On the **Interfaces** page, select the EtherChannel interface you want to delete.
Step 6 In the **Actions** pane located to the right, click **Remove**.
Step 7 Confirm you want to delete the EtherChannel interface and click **Delete**.
Step 8 Review and deploy the changes you made.

ASA system settings policy in Security Cloud Control Firewall Management

Introduction to ASA system settings policy

Manage your ASA device's operations and functionalities using a System Settings policy. This policy includes essential configurations like domain name services, enabling the secure copy server, message logging, and permitting VPN traffic without checking ACLs. By setting up a policy, you can ensure that your device is properly configured to maintain a secure network environment.

When configuring an ASA device, it's important to note that you have the option to manage multiple devices' settings with a shared system settings policy, or you can individually edit the settings for any single device.

Shared system settings policy

A shared system settings policy applies to multiple ASA devices in your network. It makes it possible to configure multiple managed devices at once, which provides consistency in your deployment and streamlines your management efforts. Any changes made to a parameter of a shared policy affect the other ASA devices that use the policy.

Choose **Policies** > **ASA System SettingsPolicies** > **ASA** > **System Settings**. See Create an ASA Shared System Settings Policy, on page 329.

You can also modify the device-specific system settings specific to a single ASA device to override the shared system settings policy values. Choose **InventorySecurity Devices** > **ASA device** > **Management** > **Settings**. See Configure or Modify Device Specific System Settings, on page 337.

Create an ASA Shared System Settings Policy

Use this section to create a new shared system settings policy for ASA devices.

Procedure

Step 1 Choose **Policies** > **ASA System Settings**.

Step 2 In the left pane, click **Policies** > **ASA** > **System Settings**.

Step 3 Click .

Step 4 In the **Name** field, enter a name for the policy and click **Save**.

Step 5 In the edit ASA shared system settings page, configure the parameters you want:

- Configure Basic DNS Settings, on page 330
- Configure HTTP Settings, on page 331
- Set the Date and Time Using an NTP Server, on page 332
- Configure SSH Access, on page 333
- Configure System Logging, on page 334
- Enable Sysopt Settings, on page 336

Note

- An orange dot () on the corresponding parameter highlights unsaved changes.
- The denied symbol () highlights parameters that use existing local values from the device.

Configure Basic DNS Settings

You need to configure a DNS server so that the ASA can resolve host names to IP addresses. You also must configure a DNS server to use fully qualified domain names (FQDN) network objects in access rules.

Procedure

Step 1 In the edit ASA system settings page, click **DNS** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 In the **DNS** section, click  to configure servers.

- **IP Version**: Select the IP address version you want to use.
- **IP Address**: Specify DNS server's IP address.
- **Interface Name**: Specify the interface where the DNS lookup should be enabled.

Note
Ensure the interface name specified here is the same on the ASA devices associated with this shared system settings policy.

Step 4 Click **Save**.

Step 5 In the **Domain name** field, specify the domain name for the ASA.

The ASA appends the domain name as a suffix to unqualified names. For example, if you set the domain name to "example.com" and specify a syslog server by the unqualified name of "jupiter," then the ASA qualifies the name to "jupiter.example.com."

Step 6 In the **DNS Lookup** section, click  and specify the interface name.

If you do not enable DNS lookup on an interface, then the ASA will not communicate with the DNS server on that interface. Make sure to enable DNS lookup on all interfaces that will be used to access DNS servers.

Note
To remove a configured interface, you can click the delete icon under **Actions**.

Step 7 Click **Save**.

Configure HTTP Settings

To access the ASA interface for management access, you must specify the addresses of all hosts/networks which are allowed to access the ASA using HTTP. If you configure HTTP redirect to redirect HTTP connections to HTTPS automatically, you must enable an access rule to allow HTTP; otherwise, the interface cannot listen to the HTTP port.

Procedure

Step 1 In the edit ASA system settings page, click **HTTP** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 Check the **Enable HTTP Server** check box to enable the HTTP server.

Step 4 In the **Port Number** field, set the port number. The port identifies the port from which the interface redirects HTTP connections.

Warning
If you change the HTTP port on your device, it may cause some problems with its connection to Security Cloud Control. It's important to remember this if you plan to alter any settings related to your device's network connection.

Step 5 Click  to add HTTP information.

- **Interface**: Ensure the interface name specified here is the same on the ASA devices associated with this shared system settings policy.
- **IP Version**: Select the IP address version you want to use.
- **IP Address**: Specify the addresses of all hosts/networks that can access the ASA using HTTP.
- **Netmask**: Specify the subnet mask for the network.

Note
To remove a host, you can click the delete icon under **Actions**.

Step 6 Click **Save**.

Set the Date and Time Using an NTP Server

NTP is used to implement a hierarchical system of servers that provide a precisely synchronized time among network systems. This kind of accuracy is required for time-sensitive operations, such as validating CRLs, which include a precise time stamp. You can configure multiple NTP servers. The ASA chooses the server with the lowest stratum—a measure of how reliable the data is.

Time derived from an NTP server overrides any time set manually.

The ASA supports NTPv4.

Procedure

Step 1 In the edit ASA system settings page, click **NTP** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 Click  to add NTP server details.

- **IP Version**: Select the IP address version you want to use.
- **IP Address**: Specify the NTP server's IP address.

  You cannot enter a hostname for the server; the ASA does not support DNS lookup for the NTP server.

- **Key Id**: Enter a number between 1 and 4294967295.

  This setting specifies the key ID for this authentication key, which enables you to use authentication to communicate with the NTP server. The NTP server packets must also use this key ID.

- **Interface Name**: Specify the interface name. Ensure the interface name specified here is the same on the ASA devices associated with this shared system settings policy.

  NTP uses an algorithm to determine which server is the most accurate and synchronizes to it. If servers are of similar accuracy, then the preferred server is used. However, if a server is significantly more accurate than the preferred one, the ASA uses the more accurate one.

- **Prefer**: (optional) Check the **Preferred** check box to set this server as a preferred server.

Note
To remove an NTP server, you can click the delete icon under **Actions**.

Step 4 Click **Save**.

Configure SSH Access

You can enable the secure copy (SCP) server on the ASA. Only clients that are allowed to access the ASA using SSH can establish a secure copy connection.

Procedure

Step 1 In the edit ASA settings policy page, click **SSH** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 Enable **Enable Scopy SSH** (secure copy SSH).

Step 4 In the **Timeout in Minutes** field, set the timeout from 1 to 60 minutes. The default is 5 minutes. The default duration is too short in most cases, and should be increased until all pre-production testing and troubleshooting have been completed.

Step 5 Click  and configure the following:

- **Interface**: Specify the interface name. Ensure the interface name specified here is the same on the ASA devices associated with this shared system settings policy.
- **IP Version**: Select the IP address version you want to use.
- **IP Address**: Specify the addresses of all hosts/networks that can access the ASA using SSH.
- **Netmask**: Specify the subnet mask for the network.

Note
To remove SSH details, you can click the delete icon under **Actions**.

Step 6 Click **Save**.

Configure System Logging

System logging is a method of collecting messages from devices to a server running a syslog daemon. Logging to a central syslog server helps in aggregation of logs and alerts. Cisco devices can send their log messages to a UNIX-style syslog service. A syslog service accepts messages and stores them in files, or prints them according to a simple configuration file. This form of logging provides protected long-term storage for logs. Logs are useful both in routine troubleshooting and in incident handling.

Security Levels

The following table lists the syslog message severity levels.

Table 36: Syslog Message Severity Levels

Level Number	Security Level	Description
0	**emergencies**	System is unusable
1	**alert**	Immediate action is needed.
2	**critical**	Critical conditions.
3	**error**	Error conditions.
4	**warning**	Warning conditions.
5	**notification**	Normal but significant conditions.
6	**informational**	Informational messages only.
7	**debugging**	Debugging messages only. Log at this level only temporarily, when debugging issues. This log level can potentially generate so many messages that system performance can be affected.

Note ASA does not generate syslog messages with a severity level of zero (emergencies).

Procedure

Step 1 In the edit ASA system settings page, click **Syslog** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 Configure the following:

- **Logging Enabled**: Enable secure logging.
- **Timestamp Enabled**: Enable to include the date and time in syslog messages.
- **Permit host down**: (Optional) Disable the feature to block new connections when a TCP-connected syslog server is down.
- **Buffer Size**: Specify the size of the internal log buffer. The allowed range is 4096 to 1048576 bytes.
- **Buffered Logging Level**: Specify which syslog messages should be sent to the internal log buffer, which serves as a temporary storage location.
- **Console Logging Level**: Specify which syslog messages should be sent to the console port.
- **Trap Logging Level**: Specify which syslog messages should be sent to the syslog server.

Step 4 Click  to add Syslog server details.

- **Interface Name**: Specify the interface name on which the syslog server resides. Ensure the interface name specified here is the same on the ASA devices associated with this shared system settings policy.
- **IP Version**: Select the IP address version you want to use.
- **IP Address**: Specify the IP address of the syslog server.
- **Protocol**: Choose the protocol (**TCP** or **UDP**) the ASA should use to send syslog messages to the syslog server.
  - **Port**: Specify the port that the syslog server listens to for syslog messages. The allowed TCP port range is 1 to 65535, and the UDP port range is 1025 to 65535.
  - **Log messages in Cisco EMBLEM format (UDP only)**: Enables EMBLEM format logging for the syslog server with UDP only.
  - **Enable secure syslog using SSL?**: Specifies that the connection to the remote logging host should use SSL/TLS for TCP only.
- **Reference Identity**: Specify the reference identity type to enable RFC 6125 reference identity checks on the certificate based on the previously configured reference identity object. See Configure Reference Identities for details on the reference identity object.

Note
To remove a Syslog server, you can click the delete icon under **Actions**.

Step 5 Click **Save**.

Enable Sysopt Settings

The crypto map ACL bound to the outgoing interface either permits or denies IPsec packets through the VPN tunnel. IPsec authenticates and deciphers packets that arrive from an IPsec tunnel, and subjects them to evaluation against the ACL associated with the tunnel.

ACLs define which IP traffic to protect. For example, you can create ACLs to protect all IP traffic between two subnets or two hosts.

Procedure

Step 1 In the edit ASA system settings page, click **Sysopt** in the left pane.

Step 2 Uncheck the **Retain existing values** checkbox to configure the values for the shared ASA system settings policy.

Important
If the **Retain existing values** check box is selected, you can't configure the values as the fields are hidden. Security Cloud Control uses the existing local values of the ASA device for this setting and doesn't inherit from the shared policy.

Step 3 Enable **Allow VPN traffic to bypass interface access lists** bypasses the ACL inspection.

Step 4 Click **Save**.

Assign a Policy from the Shared System Settings Page

After configuring a shared system settings policy, assign onboarded ASA devices and deploy the settings to the devices for the changes to take effect. Any change made to the policy affects the devices that are associated with the policy.

You can also assign a policy from the device-specific settings page.

Note You can associate an ASA device to only one shared system settings policy.

Procedure

Step 1 Choose **Policies** > **ASA System Settings**.

Step 2 In the left pane, click **Policies** > **ASA** > **System Settings**.

Step 3 Select a shared policy and click **Edit**.

Step 4 Click the filter appearing beside the policy name to assign devices.

Step 5 Select the ASA devices you want to associate with the selected policy and click **OK**.

Note
The checkboxes are ticked for devices that are already associated with the selected policy.

If you see a red icon , it means that an error has occurred while applying the shared system settings policy to your devices. To troubleshoot the issue, click the policy on the **ASA System Settings** page and in the **Error Detected** pane, click the **Device Workflows** to get more information.

Configure or Modify Device Specific System Settings

A device-specific system settings are existing values specific to an ASA device that can be modified using Security Cloud Control. You can override the shared system settings policy values with existing device-specific values for parameters you want.

This topic describes configuring an onboarded ASA device's system settings.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab.

Step 4 Select the ASA device you want and in the **Management** pane on the right, click **Settings**.

You will see the device-specific system settings of the selected ASA device.

Note
If the selected device is assigned with a shared system settings policy, the **Parent Policy** provides a link to open the policy. You can also assign a policy from the device-specific settings page. Select the ASA devices you want to associate with the selected policy and click **OK**

Step 5 Configure or modify the values of the system settings you want and click **Save**.

Note
The field descriptions for a shared and device-specific system settings remain the same. You can click the corresponding link below for more information.

- Configure Basic DNS Settings, on page 330
- Configure HTTP Settings, on page 331
- Set the Date and Time Using an NTP Server, on page 332
- Configure SSH Access, on page 333
- Configure System Logging, on page 334
- Enable Sysopt Settings, on page 336

You can click **Return to Security Devices** to navigate to the **Security Devices** page.

Step 6 Click **Save** after making the changes.

Note

An orange dot ( ) on the corresponding parameter highlights unsaved changes.

Assign a Policy from Device-Specific Settings Page

You can also assign a policy from the device-specific settings page of an onboarded ASA device.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab.

Step 4 Select the ASA device you want and in the **Management** pane on the right, click **Settings**.

You will see the device-specific settings of the selected ASA device.

Note
If the selected device is assigned with a shared system settings policy, the **Parent Policy** provides a link to open the policy. Select the ASA devices you want to associate with the selected policy and click **OK**

Step 5 Click the **Parent Policy** button to assign a shared system settings policy.

Step 6 Select a policy and click **Apply**.

Auto Assignment of ASA Devices to a Shared System Settings Policy

When onboarding a new ASA device, or checking for changes or handing out-of-band changes for existing devices, Security Cloud Control verifies whether:

- The device-specific settings match a pre-existing shared system settings policy. If there is a match, the device gets assigned to the shared system settings policy.
- The device-specific settings of the onboarded devices match each other. If they do, a new shared system settings policy gets created automatically, and devices with the same local settings are assigned to this shared policy.

Note You can rename the Shared Settings policy whether it was created by the user or the system.

Filter ASA Shared System Settings Policy

If you're searching for specific shared system settings policies on the ASA System Setting page, you can use filters based on issues and usage to narrow down your search and find what you're looking for more easily.

Choose **Policies** > **ASA System Settings**Click **Policies** > **ASA** > **System Settings** >  .

- **Issues**:
  - **Issue Detected**: Displays only the policies that have issues when applying devices to them.
  - **No issue**: Displays only the policies that are successfully applied to devices.
- **Usage**:
  - **In Use**: Displays policies that have are assigned to devices.
  - **Unused**: Displays policies that have not been assigned to any devices yet.

Disassociate Devices from Shared System Settings Policy

If an ASA device is no longer needed in the shared system settings policy, you can easily dissociate it. The device detaches from the policy when:

- Changes are made to the device-specific settings, where the corresponding setting on the shared policy is not configured to retain existing values from the device.
- Devices are detached manually from the shared system settings policy.
- Shared system settings policy is deleted from Security Cloud Control. However, this doesn't delete the device. See Delete Shared Settings Policy, on page 339.

Procedure

Step 1 Choose **Policies** > **ASA System Settings**.

Step 2 In the left pane, click **Policies** > **ASA** > **System Settings**.

Step 3 Select a shared policy and click **Edit**.

Step 4 Click the filter appearing beside the policy name to detach devices.

Step 5 Uncheck the devices you want to detach from the selected shared system settings policy and click **OK**.

Note
The changes are saved automatically and don't require any manual deployment.

Delete Shared Settings Policy

If you want to remove some shared settings policies, you have the option to select one or more of them and delete them. However, it's important to note that you can only delete them if they haven't been applied or committed to any devices yet.

Before you begin

Ensure the devices are dissociated from the shared settings policy you wish to delete. See Disassociate Devices from Shared System Settings Policy for more information.

Procedure

Step 1 In the left pane, choose **Policies** > **ASA System Settings**.

Step 2 In the left pane, click **Policies** > **ASA** > **System Settings**.

Step 3 Select a shared policy and click **Delete**.

Step 4 Click **OK** to confirm your action.

Note
If you delete an ASA from Security Cloud Control, the device-specific settings and configurations will also be deleted, and the device references will be removed from the shared settings policy.

ASA routing in Security Cloud Control Firewall Management

Routing protocols use metrics to evaluate what path will be the best for a packet to travel. A metric is a standard of measurement, such as path bandwidth that is used by routing algorithms to determine the optimal path to a destination. To aid the process of path determination, routing algorithms initialize and maintain routing tables, which include route information. Route information varies depending on the routing algorithm used.

Routing algorithms fill routing tables with various information. Destination or next hop associations tell a router that a particular destination can be reached optimally by sending the packet to a particular router representing the next hop on the way to the final destination. When a router receives an incoming packet, it checks the destination address and attempts to associate this address with a next hop.

Routing tables can also include other information, such as data about the desirability of a path. Routers compare metrics to determine optimal routes, and these metrics differ depending on the design of the routing algorithm used.

Routers communicate with one another and maintain their routing tables through the transmission of various messages. The routing update message is one such message that generally consists of all or a portion of a routing table. By analyzing routing updates from all other routers, a router can build a detailed picture of network topology. A link-state advertisement, another example of a message that is sent between routers, informs other routers of the state of the sender links. Link information can be used to build a complete picture of network topology to enable routers to determine optimal routes to network destinations.

About ASA Static Route

To route traffic to a non-connected host or network, you must define a route to the host or network, either using static or dynamic routing. Generally, you must configure at least one static route: a default route for all traffic that is not routed by other means to a default network gateway, typically the next hop router.

For general information on how ASA routing concepts and CLI commands, see the following documents:

- *Static and Default Routes* chapter from ASDM Book 1: Cisco ASA Series General Operations ASDM Configuration Guide, X,Y.
- *Static and Default Routes* chapter from CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide, X,Y.

Default Route

The simplest option is to configure a default static route to send all traffic to an upstream router, relying on the router to route the traffic for you. A default route identifies the gateway IP address to which the ASA sends all IP packets for which it does not have a learned or static route. A default static route is simply a static route with 0.0.0.0/0 (IPv4) or ::/0 (IPv6) as the destination IP address.

You should always define a default route.

Static Route

You might want to use static routes in the following cases:

- Your networks use an unsupported router discovery protocol.
- Your network is small and you can easily manage static routes.
- You do not want the traffic or CPU overhead associated with routing protocols.
- In some cases, a default route is not enough. The default gateway might not be able to reach the destination network, so you must also configure more specific static routes. For example, if the default gateway is outside, then the default route cannot direct traffic to any inside networks that are not directly connected to the ASA.
- You are using a feature that does not support dynamic routing protocols.

Static Route Tracking

One of the problems with static routes is that there is no inherent mechanism for determining if the route is up or down. They remain in the routing table even if the next hop gateway becomes unavailable. Static routes are only removed from the routing table if the associated interface on the ASA goes down.

The static route tracking feature provides a method for tracking the availability of a static route and installing a backup route if the primary route should fail. For example, you can define a default route to an ISP gateway and a backup default route to a secondary ISP in case the primary ISP becomes unavailable.

The ASA implements static route tracking by associating a static route with a monitoring target host on the destination network that the ASA monitors using ICMP echo requests. If an echo reply is not received within a specified time period, the host is considered down, and the associated route is removed from the routing table. An untracked backup route with a higher metric is used in place of the removed route.

When selecting a monitoring target, you need to make sure that it can respond to ICMP echo requests. The target can be any network object that you choose, but you should consider using the following:

- The ISP gateway (for dual ISP support) address.
- The next hop gateway address (if you are concerned about the availability of the gateway).
- A server on the target network, such as a syslog server, that the ASA needs to communicate with.
- A persistent network object on the destination network.

Configure ASA Static Route

A static route defines where to send traffic for specific destination networks.

This section describes the steps to add a static route to an ASA device.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab.

Step 4 Select a device you want to configure a static route.

Step 5 In the **Management** pane on the right, click **Routing**.

Step 6 Click  to add a static route.

Step 7 You can enter a **Description** for the route.

Step 8 Select whether the route is for an **IPv4** or **IPv6** address.

Step 9 Configure the route properties:

- **Interface**: Select the interface through which you want to send traffic. The gateway address needs to be accessible through this interface.

  You can use a **Null0** route to forward unwanted or undesirable traffic so the traffic is dropped. Static Null0 routes have a favorable performance profile. You can also use static null0 routes to prevent routing loops.

  The ASA CLI accepts both Null0 or null0 strings.
- **Gateway IP**: (Not applicable to a **Null0** route) Select the network object that identifies the IP address for the gateway to the destination network. Traffic is sent to this address.
- **Metric**: The administrative distance for the route, between 1 and 254. The default for static routes is 1. If there are additional routers between the interface and the gateway, enter the number of hops as the administrative distance.

  Administrative distance is a parameter used to compare routes. The lower the number, the higher precedence the route is given. Connected routes (networks directly connected to an interface on the device) always take precedence over static routes.
- **Destination IP**: Select the network object(s), that identifies the destination network, that contains the host(s), that uses the gateway in this route.
- **Destination Mask** (only for IPv4 addressing): Enter the subnet mask for the destination IP.
- **Tracking** (only for IPv4 addressing): Enter a unique identifier for the route tracking process.

Step 10 Click **Save**.

Edit ASA Static Route

You can edit the static route parameters associated with an ASA device.

Note However, you cannot select a different IP version while modifying the static route. Alternatively, you can create a new static route based on your requirement.

Procedure

Step 1 Select an ASA device you want to edit the static route.

Step 2 In the **Management** pane on the right, click **Routing**.

Step 3 In the routing listing page, select a route you want to modify and in the **Actions** pane on the right, click **Edit**.

Step 4 Modify the values you want and click **Save**. See Configure ASA Static Route, on page 342 for information on the routing parameters.

Delete a Static Route

Before you begin

Deleting a static route may impact the connectivity to your device's local SDC or Security Cloud Control. Ensure a proper disaster recovery procedure is in place for any connectivity loss.

Procedure

Step 1 Select an ASA device you want to delete.

Step 2 In the **Management** pane on the right, click **Routing**.

Step 3 In the routing listing page, select a route you want to modify and in the **Actions** pane on the right, click **Delete**.

Step 4 Click OK to confirm the changes.

API tokens

Developers use Security Cloud Control API tokens when making Security Cloud Control REST API calls. The API token must be inserted in the REST API authorization header for a call to succeed. API tokens are "long-lived" access tokens which do not expire; however, you can renew and revoke them.

You can generate API tokens from within Security Cloud Control. These tokens are only visible immediately after they're generated and for as long as the General Settings page is open. If you open a different page in Security Cloud Control and return to the General Settings page, the token is no longer visible, although it is clear that a token has been issued.

Individual users can create their own tokens for a particular tenant. One user cannot generate a token on behalf of another. Tokens are specific to an account-tenant pair and cannot be used for other user-tenant combinations.

API Token Format and Claims

The API token is a JSON Web Token (JWT). To learn more about the JWT token format, read the Introduction to JSON Web Tokens.

The Security Cloud Control API token provides the following set of claims:

- **id** - user/device uid
- **parentId** - tenant uid
- **ver** - the version of the public key (initial version is 0, for example, **cdo_jwt_sig_pub_key.0**)
- **subscriptions** - Security Services Exchange subscriptions (optional)
- **client_id** - "**api-client**"
- **jti** - token id

Manage ASA certificates

Digital certificates provide digital identification for authenticating devices and individual users. A digital certificate includes information that identifies a device or user, such as the name, serial number, company, department, or IP address. A digital certificate also includes a copy of the public key for the user or device. For more information on digital certificates, see the "Digital Certificates" chapter in the "Basic Settings" book of the Cisco ASA Series General Operations ASDM Configuration, X.Y document.

Certificate Authorities (CAs) are trusted authorities that “sign” certificates to verify their authenticity, thereby guaranteeing the identity of the device or user. CAs also issue identity certificates.

- **Identity Certificate** — Identity certificates are certificates for specific systems or hosts. You can generate these yourself using the OpenSSL toolkit or get them from a Certificate Authority. You can also generate a self-signed certificate. CAs issue identity certificates, which are certificates for specific systems or hosts.
- **Trusted CA Certificate** — Trusted CA certificates are certificates that the system can use to sign other certificates. These certificates differ from internal identity certificates with respect to the basic constraints extension and the CA flag, which are enabled for CA certificates but disabled for identity certificates. A trusted CA certificate is self-signed and called a root certificate.

The Remote Access VPN uses digital certificates for authenticating secure gateways and AnyConnect clients (endpoints) to establish a secure VPN connection.

For more information, see Remote Access VPN Certificate-Based Authentication.

Guidelines for Certificate Installation

Read the following guidelines for certificate installation on ASA:

- Certificate can be installed on a single or multiple ASA devices simultaneously.
- Only one certificate can be installed at a time.
- Certificate can be installed only on a live ASA device and not on a modal device.

Install ASA Certificates

Note Ensure that the ASA device has no out-of-band changes, and all staged changes have been deployed.

The following lists the digital certificates and formats supported by Security Cloud Control:

- Identity Certificate can be installed using the following methods:
  - PKCS12 file import.
  - Self-Signed certificate
  - Certificate Signing Request (CSR) import.
- Trusted CA Certificate can be installed using PEM or DER format.

Watch the screencast demonstrates the steps for installing certificates on ASA using Security Cloud Control. It also shows steps for modifying, exporting, and deleting installed certificates.

Supported Certificate Formats

- PKCS12: PKCS#12, P12, or PFX format is a binary format for storing the server certificate, any intermediate certificates, and the private key in one encryptable file. PFX files usually have extensions such as **.pfx** and **.p12**.
- PEM: PEM (originally “Privacy Enhanced Mail”) files contain ASCII (or Base64) encoding data and the certificate files can be in .pem, .crt, .cer, or .key formats. They are Base64 encoded ASCII files and contain "-----BEGIN CERTIFICATE-----" and "-----END CERTIFICATE-----" statements.
- DER: DER (Distinguished Encoding Rules) format is simply a binary form of a certificate instead of the ASCII PEM format. It sometimes has a file extension of **.der**, but it often has a file extension of **.cer**, so the only way to tell the difference between a DER .cer file and a PEM .cer file is to open it in a text editor and look for the BEGIN/END statements. Unlike PEM, DER-encoded files do not contain plain text statements such as -----BEGIN CERTIFICATE-----.

Trustpoints Screen

After onboarding the ASA device into Security Cloud Control, on the **Security Devices** tab, select the ASA device and in the **Management** pane on the left, click **Trustpoints**.

In the **Trustpoints** tab, you'll see the certificates that are already installed on the device.

- The "Installed" status indicates that the corresponding certificate is installed successfully on the device.
- The "Unknown" status indicates that the corresponding certificate doesn't contain any information. You need to remove and upload it again with the correct details. Security Cloud Control discovers all the unknown certificates as trusted CA certificates.
- Click the row that shows "Installed" to view certificate details on the right pane. Click **more** to see additional details of the selected certificate.
- An installed Identity Certificate can be exported in PKCS12 or PEM format and imported into other ASA devices. See Exporting an Identity Certificate.

- Only the advanced settings can be modified on an installed certificate.
  - Click **Edit** to modify the advanced settings.
  - After making the changes, click **Send** to install the updated certificate.

Install an Identity Certificate Using PKCS12

You can select an existing trustpoint object created for PKCS12 format and install it on the ASA device. You can also create a new trustpoint object from the installation wizard and install the certificate on the ASA device.

Before you begin

- Read the guidelines for certificate installation.
- ASA must be “Synced” state and “Online”.

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 To install an identity certificate on a single ASA device, do the following:

a) Click the **Devices** tab.
b) Click the **ASA** tab and select an ASA device.
c) In the **Management** pane on the right, click **Trustpoints**.
d) Click **Install**.

Note
You can also install a certificate on multiple ASA devices. Select multiple ASA devices and in the **Devices Action** on the right, click **Install Certificate**.

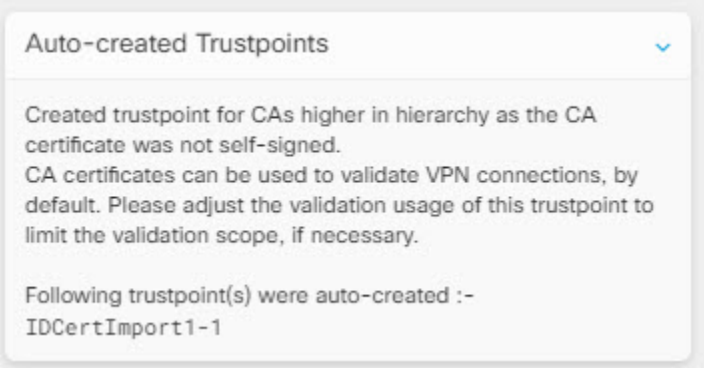
Step 4 From **Select Trustpoint Certificate to Install**, click one of the following:

- **Create** to add a new trustpoint object.
- **Choose** to select Certificate Enrollment Object of the PKCS type.

Step 5 Click **Send**.

This installs the certificate on the ASA device

Note
If you are importing a PKCS12 certificate that has intermediate CAs installed on it, ASA automatically creates and installs trustpoint objects on the device for every intermediate CA certificate that is not installed already. When you click on the identity certificate, you'll see a message on the right pane, as shown in the following example.



Install a Certificate Using Self-Signed Enrollment

You can select an existing trustpoint object created for a self-signed certificate and install it on the ASA device. You can also create a new trustpoint object from the installation wizard and install the certificate on the ASA device.

Before you begin

- Read the guidelines for certificate installation.
- ASA must be “Synced” state and “Online”.

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 To install an identity certificate on a single ASA device, do the following:

a) Click the **Devices** tab.
b) Click the **ASA** tab and select an ASA device.
c) In the **Management** pane on the right, click **Trustpoints**.
d) Click **Install**.

Note
You can also install a signed certificate on multiple ASA devices. Select multiple ASA devices and in the **Devices Action** on the right, click **Install Certificate**.

Step 4 From **Select Trustpoint Certificate to Install**, click one of the following:

- **Create** to add a new trustpoint object.
- **Choose** to select a Certificate Enrollment Object of the type Self-Signed..

Step 5 Click **Send**.

For self signed enrollment type trustpoints, the Issuer Common Name status will always be the ASA device since the managed device is acting as its own CA and does not need a CA certificate to generate its own Identity Certificate.

Manage a Certificate Signing Request (CSR)

You must first generate a CSR request and then get this request signed by a trusted Certificate Authority (CA). Then, you can install the signed identity certificate issued by the CA on the ASA device.

- Read the guidelines for certificate installation.
- ASA must be “Synced” state and “Online”.

The following diagram depicts the workflow for generating CSR and installing a certified issued certificate in ASA:

Generate a CSR Request

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select an ASA device.

Step 5 To install an identity certificate on a single ASA device, do the following:

Step 6 Click **Install**.

Step 7 From **Select Trustpoint Certificate to Install**, click one of the following:

- **Create** to add a new trustpoint CSR object.
- **Choose**to select the CSR request trustpoint that is already created..

Step 8 Click **Send**.

This generates an unsigned Certificate Signing Request (CSR).

Step 9 Click the copy icon copy_icon.png to copy the CSR details. You can also download the CSR request in ".csr" file format.

Step 10 Click **OK**.

Step 11 Submit the certificate signing request (CSR) to the Certificate Authority to sign the certificate.

Install a Signed Identity Certificate Issued by a Certificate Authority

Once the CA issues the signed certificate, install it on the ASA device

Procedure

Step 1 In the **Trustpoint** screen, click the CSR request with the **Status** as "Awaiting Signed Certificate Install" and in the **Actions** pane on the right, click **Install Certified ID Certificate**.

Step 2 Upload the signed certificate received from the CA. You can drag and drop the file or paste its contents in the provided field. The trustpoint commands are generated based on the trustpoint you selected.

Step 3 Click **Send**.

This installs the signed identity certificate to the ASA device. Installing certificates will immediately deploy changes to the device.

Note
You can also install a certificate on multiple ASA devices. Select multiple ASA devices and in the **Devices Action** on the right, click **Install Certificate**.

Install a Trusted CA Certificate in ASA

Before you begin

- Read the guidelines for certificate installation.
- ASA must be “Synced” state and “Online”.

Procedure

Step 1 In the navigation menu, click **Inventory**.

Step 2 In the navigation menu, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select an ASA device.

Step 5 To install an identity certificate on a single ASA device, do the following:

a) Select an ASA device and in the **Management** pane on the right, click **Trustpoints**.

b) Click **Install**.

Note
You can also install a certificate on multiple ASA devices. Select multiple ASA devices and in the **Devices Action** on the right, click **Install Certificate**.

Step 6 From **Select Trustpoint Certificate to Install**, click one of the following:

- **Create** to add a new trustpoint object.
- **Choose**select a Trusted Certificate Authority Object.

Step 7 Click **Send**.

This installs the trusted CA file on the ASA device.

Export an Identity Certificate

You can export and import the keypair and issued certificates associated with a trustpoint in PKCS12 or PEM format. This format is useful to manually duplicate a trustpoint configuration on a different ASA.

Procedure

Step 1 In the navigation menu, click **Inventory**.

Step 2 In the navigation menu, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA**.

Step 5 Select the ASA device and in the **Management** on the right, click **Trustpoints**.

Step 6 Click the identity certificate to export the certificate configuration. Alternatively, you can search for the certificate by entering its name in the search field.

Step 7 In the **Actions** pane on the right, click **Export Certificate**.

Step 8 Choose the certificate format by clicking the **PKCS12 Format** or the **PEM Format**.

Step 9 Enter the encryption passphrase used to encrypt the PKCS12 file for export.

Step 10 Confirm the encryption passphrase.

Step 11 Click **Export** to export the certificate configuration.

An information dialog box appears, informing you that the certificate configuration file has been successfully exported to the location that you specified.

What to do next

If you want to view the downloaded identity certificate, execute the following commands in the directory where the certificate was downloaded:

1. To decode certificate in base64 format:

   ```
   openssl base64 -d -in <file_name>.p12 -out <file_name>_b64.p12
   ```

2. To view certificate:

   ```
   openssl pkcs12 -in <file_name>_b64.p12 -passin pass:<password>
   ```

Edit an Installed Certificate

You can modify only the advanced options of the installed certificate.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab.

Step 5 Select the ASA device and in the **Management** on the right, click **Trustpoints**.

Step 6 Click the certificate to modify and in the **Actions** pane on the right, click **Edit**.

Step 7 Modify the required parameters and click **Save**.

Delete an Existing Certificate from ASA

You can delete a certificate one after another. After deleting a certificate, it cannot be restored.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Select the ASA device and in the **Management** on the right, click **Trustpoints**.

Step 4 Click the certificate to be deleted and in the **Actions** pane on the right, click **Remove**.

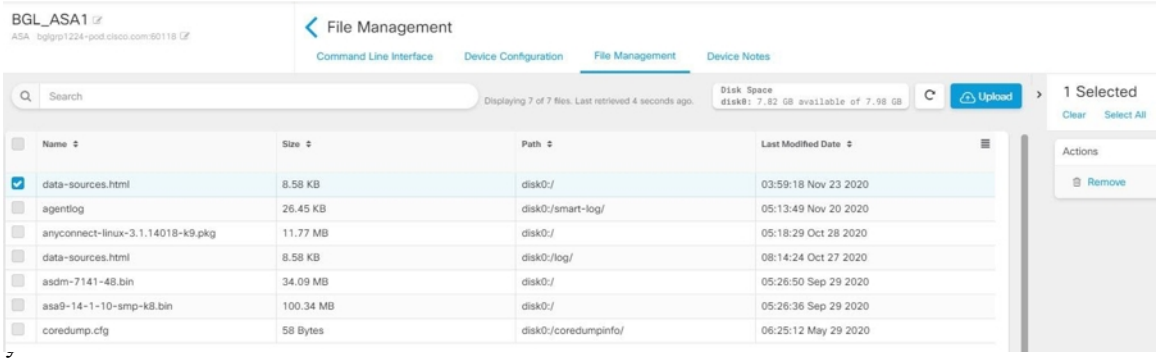
Step 5 Click **OK** to remove the selected certificate.

ASA file management

Security Cloud Control provides the file management tool to help you perform basic file management tasks such as viewing, uploading, or deleting files present on the ASA device's flash (disk0) space.

Note You cannot manage files present on disk1.

The File Management screen lists all the files present on the device's flash (disk0). On a successful file upload, you can click the refresh icon to see the file. By default, this screen refreshes automatically every 10 minutes. The **Disk Space** field shows the amount of disk space on the disk0



You can upload the AnyConnect image to single or multiple ASA devices. After a successful upload, the AnyConnect image is associated with the RA VPN configuration on the selected ASA devices. This helps you to upload the newly released AnyConnect package to multiple ASA devices simultaneously.

Upload File to the Flash System

Security Cloud Control supports only URL based file upload from the remote server. The supported protocols for uploading the file are HTTP, HTTPS, TFTP, FTP, SMB, or SCP. You can upload any files such as the AnyConnect software images, DAP.xml, data.xml, and host scan image files to a single or multiple ASA device.

Note Security Cloud Control doesn't upload the file to selected ASA devices if the remote server's URL path is invalid or for any issues that may occur. You can navigate to the device **Workflows** for more details.

Suppose the device is configured for High Availability, Security Cloud Control uploads the file to the standby device first, and only after a successful upload, the file is uploaded to the active device. The same behavior applies during the file removal process.

The syntax of supported protocols for uploading the file:

Protocol	Syntax	Example
HTTP	http://[[path/]filename]	http://www.geonames.org/data-sources.html
HTTPS	https://[[path/]filename]	https://docs.aws.amazon.com/amazov/tagging.html
TFTP	tftp://[[path/]filename]	tftp://10.10.16.6/ftd/components.html
FTP	ftp://[[user[:password]@]server[:port]/[path/]filename]	[illegible]
SMB	smb://[[path/]filename]	smb://10.10.32.145//sambashare/hello.txt
SCP	scp://[[user[:password]@]server[/path]/ filename]	scp://rootcisco123@10.10.16.6//root/events_send.py

Before You Begin

- Make sure that the remote server is accessible from the ASA device.
- Make sure that the file is already uploaded to the remote server.
- Make sure that there is a network route from the ASA device to that server.
- If FQDN is used in the URL, make sure that DNS is configured.
- The remote server's URL must be a direct link without prompting for authentication.
- If the remote server IP address is NATed, you have to provide the NATed public IP address of the remote server location.

Note If you upload a file to an ASA that is configured as a peer in a failover, Security Cloud Control does not acknowledge the new file for the other peer in the failover pair and the device status changes to **Not Synced**. You must manually deploy changes to **both** devices for Security Cloud Control to recognize the file in both devices.

Upload File to a Single ASA Device

Use this procedure to upload a file to a single ASA device.

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select an ASA device.

Step 5 In the **Management** pane on the right, click **File Management**. You can view available disk space and the files present on the ASA device.

Step 6 Click the **Upload** button on the right.

Step 7 In the **URL link**, specify the server's path where the file is pre-uploaded. The **Destination Path** field shows the name of the file that is being uploaded to the **disk0** directory. If you want to upload the file to a specific directory within disk0, specify its name in this field. For example, if you're going to upload a dap.xml file to the "DAPFiles" directory, specify "**disk0:/**DAPFiles/dap.xml" in the field.

Note
You can view the directories present in the disk0 folder by executing the **dir** command in the Security Cloud Control ASA CLI interface.

Step 8 If the specified server path points to an AnyConnect file, the **Associate file with RA VPN Configuration** check box is enabled. **Note**: This check box is enabled only for an AnyConnect file name that follows the right naming convention, which is 'anyconnect-win-xxx.pkg', 'anyconnect-linux-xxx.pkg', or 'anyconnect-mac-xxx.pkg' format. On selecting this check box, Security Cloud Control associates the AnyConnect file to the RA VPN configuration on the selected ASA device after a successful upload.

Step 9 Click **Upload**. Security Cloud Control uploads the file to the device.

Step 10 If you have chosen to associate the AnyConnect package with the RA VPN configuration in step 5, deploy the new RA VPN configuration to the ASA device.

Upload File to Multiple ASA Devices

Use this procedure to upload a file to multiple ASA devices at the same time.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select multiple ASA devices to perform a bulk upload.

Step 5 In the **Device Actions** pane on the right, click **Upload File**. Note: The **Upload File** link appears if ASA devices are online.

Step 6 In the **URL link**, specify the server's paths where the file is pre-uploaded. The **Destination Path** field shows the name of the file that is being uploaded to the **disk0** directory. If you want to upload the file to a specific

directory within disk0, specify its name in this field. For example, if you're going to upload a dap.xml file to the "DAPFiles" directory, specify "**disk0:**/DAPFiles/dap.xml" in the field.

Note
You can view the directories present in the disk0 folder by executing the **dir** command in the Security Cloud Control ASA CLI interface.

Step 7 If the specified server path points to an AnyConnect file, the **Associate file with RA VPN Configuration** check box is enabled.

Note
This check box is enabled only for an AnyConnect file name that follows the right naming convention, which is 'anyconnect-win-xxx.pkg', 'anyconnect-linux-xxx.pkg', or 'anyconnect-mac-xxx.pkg' format. On selecting this check box, Security Cloud Control associates the AnyConnect file to the RA VPN configuration on the selected ASA devices after a successful upload.

Step 8 Click **Upload**.

Step 9 If you have chosen to associate the AnyConnect package with the RA VPN configuration in step 4, deploy the new RA VPN configuration to ASA devices.

You can view the progress of uploading the file on individual devices. Select the ASA device, and in the **Management** pane on the right, click **File Management**. If the file upload is in progress, wait for the operation to complete.

You don't have to deploy the configuration changes on the device.

Remove Files from ASA

You are not allowed to remove AnyConnect files associated with the RA VPN configuration. You have to disassociate the AnyConnect file from the corresponding RA VPN configuration and then remove the file from the File Management tool.



Note If you upload a file to an ASA that is configured as a peer in a failover, Security Cloud Controldoes not acknowledge the new file for the other peer in the failover pair and the device status changes to **Not Synced**. You must manually deploy changes to **both** devices for Security Cloud Control to recognize the file in both devices.

The remove operation deletes the selected files permanently from the flash memory. A message appears when deleting files asking for confirmation. Use the following procedure to remove files from a selected ASA device:

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select an ASA device.

Step 5 In the **Management** pane on the right, click **File Management**.

Step 6 Select the files you want to remove, and under **Actions** on the right, click **Remove**. A maximum of 25 files can be selected. If Security Cloud Control fails to remove some files, you can see the device **Workflows** to determine the removed and retained files.

Step 7 If you have chosen to remove the AnyConnect package, deploy the new RA VPN configuration to the ASA device.

Managing ASAs with pre-existing High Availability configuration

Configuration Changes Made to ASAs in Active-Active Failover Mode

When Security Cloud Control) changes an ASA's running configuration with the one staged on Security Cloud Control, or when it changes the configuration on Security Cloud Control with the one stored on the ASA, it attempts to change only the relevant lines of the configuration file if that aspect of the configuration can be managed by the Security Cloud Control GUI. If the desired configuration change cannot be made using the Security Cloud Control GUI, Security Cloud Control attempts to overwrite the entire configuration file to make the change.

Here are two examples:

- You *can* create or change a network object using the Security Cloud Control GUI. If Security Cloud Control needs to deploy that change to an ASA's configuration, it overwrites the relevant lines of the running configuration file on the ASA when the change occurs.
- You *cannot* create a new ASA user using the Security Cloud Control GUI. If a new user is added to the ASA using the ASA's ASDM or CLI, when that out-of-band change is accepted and Security Cloud Control updates the stored configuration file, Security Cloud Control attempts to overwrite that ASA's entire configuration file staged on Security Cloud Control.

These rules are not followed when the ASA is configured in active-active failover mode. When Security Cloud Control manages an ASA configured in active-active failover mode, Security Cloud Control cannot always deploy all configuration changes from itself to the ASA or read all configuration changes from the ASA into itself. Here are two instances in which this is the case:

- **Changes to an ASA's configuration file made in Security Cloud Control, that Security Cloud Control does not otherwise support in the Security Cloud Control GUI, cannot be deployed to the ASA**. Also, a combination of changes made to the configuration file that Security Cloud Control does not support, along with changes made to the configuration file that Security Cloud Control does support, cannot be deployed to the ASA. In both cases, you receive the error message, "Security Cloud Control does not support replacing full configurations for devices in failover mode at this time. Please click Cancel and apply changes to the device manually." Along with the message in the Security Cloud Control interface, you see a Replace Configuration button that is disabled.
- **Out-of-band changes made to an ASA configured in active-active failover mode will not be rejected by Security Cloud Control**. If you make an out-of-band change to an ASA's running configuration, the ASA gets marked with "Conflict Detected" on the **Security Devices** page. If you review the conflict and

try to reject it, Security Cloud Control blocks that action. You receive the message, "Security Cloud Control does not support rejecting out-of-band changes for this device. Either this device is running an unsupported software version or is a member of a active/active failover pair. Please proceed to accept the out-of-band changes by clicking Continue."

Caution If you find yourself having to accept out-of-band changes from the ASA, any configuration changes staged on Security Cloud Control, but not yet deployed to the ASA, will be overwritten and lost.

Security Cloud Control does support configuration changes made to an ASA in failover mode when those changes are supported by the Security Cloud Control GUI.

Manage ASA configuration files

ASA stores their configurations in a single configuration file. You can view the device configuration file on Security Cloud Control Firewall Management and perform a variety of operations on it depending on the device.

View a Device's Configuration File

The ASA stores the entire configuration in a single configuration file. You can view the configuration file using Security Cloud Control.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 3 Click the ASA device type tab.

Step 4 Select the device or model whose configuration it is you want to view.

Step 5 In the **Management** pane on the right, click **Configuration**.
The full configuration file is displayed.

About System Log Activity

When you set up a new rule, you can specify how often and at what severity level you want to collect its activity. To do this, you can select the corresponding severity levels and then choose the frequency of data collection. This will ensure that you have the necessary information to monitor and analyze the activity generated by your rules.

Note ASA does not generate syslog messages with a severity level of zero (emergencies).

You have the option to adjust the logging interval, which indicates how frequently the log records are updated. This interval is measured in seconds and can be set from 1 to 600. By default, the interval is set to 300 seconds. This interval value is also utilized as a timeout period for removing an inactive flow from the cache that collects drop statistics.

Table 37: Log Rule Activity

Security Level	Description
emergencies	System is unusable.
alert	Immediate action is needed.
critical	Critical conditions.
error	Error conditions.
warning	Warning conditions.
notification	Normal but significant conditions.
informational	Informational messages only.
debugging	Debugging messages only.

Configure DNS on ASA

Use this procedure to configure a domain name server (DNS) on each of your ASAs.

Prerequisites

- The ASA must be able to reach the internet.
- Before you begin, gather this information:
  - The name of the ASA interface that can reach the DNS server; for example, inside, outside, or dmz.
  - The IP address of the DNS server your organization uses. If you don't maintain your own DNS server, you can use Cisco Umbrella. The IP address for Cisco Umbrella is 208.67.220.220.

Procedure

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the **ASA** tab and select all the ASAs on which you want to configure DNS.

Step 5 In the Actions pane to the right, select **Command Line Interface**.

Step 6 Click the CLI macro favorites star.

Step 7 Select the **Configure DNS** macro in the Macros panel.

Step 8 Se;ect **>_View Parameters** and in the parameters column, fill in the values for these parameters:

- IF_Name - The name of the ASA interface that can reach the DNS server.
- IP_ADDR - The IP address of the DNS server your organization uses.

Step 9 Click **Send to devices**.

ASA command line interface

You can use the Security Cloud Control Firewall Management command line interface (CLI) for managing or troubleshooting the ASA and other device types.

For more information, see .

Configure ASA Using Security Cloud Control CLI

You can configure an ASA device by running the CLI commands in the CLI interface provided in Security Cloud Control. See ASA command line interface, on page 359.

Add a New Logging Server

System logging is a method of collecting messages from devices to a server running a syslog daemon. Logging to a central syslog server helps in aggregation of logs and alerts.

For more information, see the 'Monitoring' section of the 'Logging' chapter in the CLI Book1: Cisco ASA Series General Operations CLI Configuration Guide of the ASA version you are running.

Configure the DNS Server

You need to configure DNS servers so that the ASA can resolve host names to IP addresses. You also must configure DNS servers to use fully qualified domain names (FQDN) network objects in access rules.

For more information, see the 'Basic Settings' chapter of the 'Configure the DNS Server' section in CLI Book1: Cisco ASA Series General Operations CLI Configuration Guide of the ASA version you are running.

Add Static and Default Routes

To route traffic to a non-connected host or network, you must define a route to the host or network, either using static or dynamic routing.

For more information, see the 'Static and Default Routes' chapter of CLI Book1: Cisco ASA Series General Operations CLI Configuration Guide.

Configure Interfaces

You can configure the management and data interfaces using CLI commands. For more information, see the 'Basic Interface Configuration' chapter of CLI Book1: Cisco ASA Series General Operations CLI Configuration Guide.

ASA Bulk CLI Use Cases

The following cases are possible workflows you may experience when using Security Cloud Control's bulk CLI function for ASA devices.

Show all users in the running configuration of an ASA and then delete one of the users

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device.

Step 4 Click the **ASA** tab.

Step 5 Search and filter the device list for the devices from which you want to delete the user and **select** them.

Note
Make sure that the devices you choose are synced. Only the following commands are allowed when the device is not synced: `show`, `ping`, `traceroute`, `vpn-sessiondb`, `changeto`, `dir`, `copy`, and `write`.

Step 6 Click **>_Command Line Interface** in the details pane. Security Cloud Control lists the devices you chose in the My List pane. If you decide to send the command to fewer devices, uncheck devices in that list.

Step 7 In the command pane, enter `show run | grep user` and click **Send.** All the lines in the running configuration file that contain the string user will be displayed in the response pane. The Execution tab opens to display the devices on which the command was executed.

Step 8 Click the By Response tab and review the responses to determine which devices have the user that you want to delete.

Step 9 Click the My List tab and select the list of devices from which you want to delete the user.

Step 10 In the command pane, enter the no form of the user command to delete user2 and then click **Send**. For the sake of this example, you are going to delete user2:

```
no user user2 password reallyhardpassword privilege 10
```

Step 11 Look in the history panel for the instance of the `show run | grep user` command, you used to search for the user name. Select that command, look at the list of devices in the Execution list and select **Send**. You should see that the username has been deleted from the devices you specified.

Step 12 If you are satisfied that you have deleted the correct users from the running configuration and that the correct users remain in the running configuration:

a. Select the `no user user2 password reallyhardpassword privilege 10` command from the history pane.

b. Click the **By Device** tab and click **Execute a command on these devices**.

c. In the command pane, click **Clear** to clear the command pane.

d. Enter the command `deploy memory` and click **Send**.

Find all SNMP configurations on selected ASAs

This procedure shows you all the SNMP configuration entries in the running configuration of the ASA.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device.

Step 4 Click the **ASA** tab.

Step 5 Filter and search for the devices on which you want to analyze the SNMP configuration in the running configuration and **select** them.

Note
Make sure that the devices you choose are synced. Only the following commands are allowed when the device is not synced: `show`, `ping`, `traceroute`, `vpn-sessiondb`, `changeto`, and `dir`.

Step 6 Click **Command Line Interface** in the details pane. The devices you chose are in the My List pane. If you decide to send the command to fewer devices, uncheck devices in the list.

Step 7 In the command pane, enter `show run | grep snmp` and click **Send.** All the lines in the running configuration file that contain the string snmp will be displayed in the response pane. The Execution tab opens to display the devices on which the command was executed.

Step 8 Review the command output in the response pane.

ASA Command Line Interface Documentation

Security Cloud Control fully supports the ASA command line interface. We provide a terminal-like interface within Security Cloud Control for users to send ASA commands to single devices and multiple devices simultaneously. The ASA command line interface documentation is extensive. Rather than recreating parts of it in the Security Cloud Control documentation, here are pointers to the ASA CLI documentation on Cisco.com.

ASA Command Line Interface Configuration Guides

Starting with ASA version 9.1, the ASA CLI Configuration Guide is broken into three separate books:

- CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide
- CLI Book 2: Cisco ASA Series Firewall CLI Configuration Guide
- CLI Book 3: Cisco ASA Series VPN CLI Configuration Guide

You can reach the ASA CLI Configuration Guides on Cisco.com by navigating, Support > Products by Category > Security > Firewalls > ASA 5500 > Configure > Configuration Guides.

A Few Specific ASA Command Line Interface Configuration Guide Sections

Filtering show and more Command Output. You can learn about filtering show command output by using regular expressions in CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide under Filter show and more Command Output.

ASA Command Reference

The ASA Command Reference Guide is an alphabetical listing of all the ASA commands and their options. The ASA command reference is not version specific. It is published in four books:

- Cisco ASA Series Command Reference, A - H Commands
- Cisco ASA Series Command Reference, I - R Commands
- Cisco ASA Series Command Reference, S Commands
- Cisco ASA Series Command Reference, T - Z Commands and IOS Commands for the ASASM

You can reach the ASA Command Reference Guides on Cisco.com by navigating, Support > Products by Category > Security > Firewalls > ASA 5500 > Reference Guides > Command References > ASA Command References.

Manage the Device Configuration

The ASA stores its configuration in a single configuration file. You can view the configuration file on Security Cloud Control and perform a variety of operations on it.

Compare ASA Configurations Using Security Cloud Control

Use this procedure to compare the configurations of two ASAs.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the ASA device or the **Templates** tab to locate the ASA model device.

Step 4 Click the **ASA** tab.

Step 5 Filter your device list for the devices you want to compare.

Step 6 Select two of your ASAs. Their status does not matter. You are comparing the configurations of the ASAs stored on Security Cloud Control.

Step 7 In the Device Actions pane on the right, click **Compare.**

Step 8 In the Comparing Configurations dialog, click **Next** and **Previous** to skip through the differences, highlighted in blue, in the configuration files.

Restore an ASA Configuration

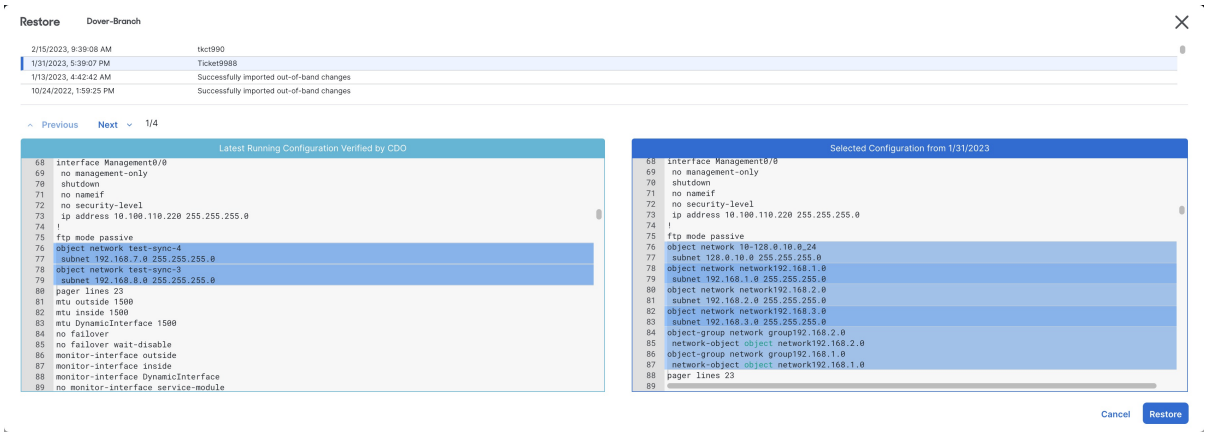
If you make a change to an ASA's configuration, and you want to revert that change, you can restore an ASA's past configuration. This is a convenient way to remove a configuration change that had unexpected or undesired results.

About Restoring an ASA Configuration

Review these notes before restoring a configuration:

- Security Cloud Control compares the configuration you choose to restore with the last known configuration deployed to the ASA, it does not compare the configuration you choose to restore with a configuration that is staged but not deployed to the ASA. If you have any undeployed changes on your ASA and you restore a past configuration, the restore process will overwrite your undeployed changes and you will lose them.
- Before you can restore a past configuration, the ASA can be in a Synced or Not Synced state but if the device is in a Conflict Detected state, the conflict must be resolved before you restore a past configuration.
- Restoring a past configuration overwrites all intermediate deployed configurations changes. For example, restoring the configuration from 1/31/2023 in the list below overwrites the configuration changes made on 2/15/2023.
- Clicking the Next and Previous buttons will move you through the configuration file and highlight the configuration file changes
- If you originally applied a change request label to your configuration changes, that label appears in the Restore Configuration list.

Figure 8: ASA Restore Configuration Screen



How Long are Configuration Changes Kept?

You can restore an ASA configuration that is 1 year old or less. Security Cloud Control restores configuration changes logged in its changelog. The change log records changes every time a configuration change is written to or read from an ASA. Security Cloud Control stores 1 year's worth of changelogs and there is no limitation on the number of the backups made within the previous year.

How to Restore an ASA Configuration

Procedure

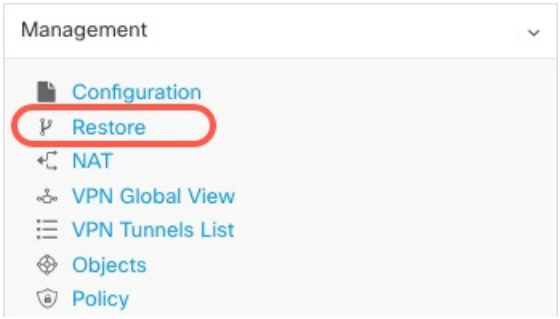
Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

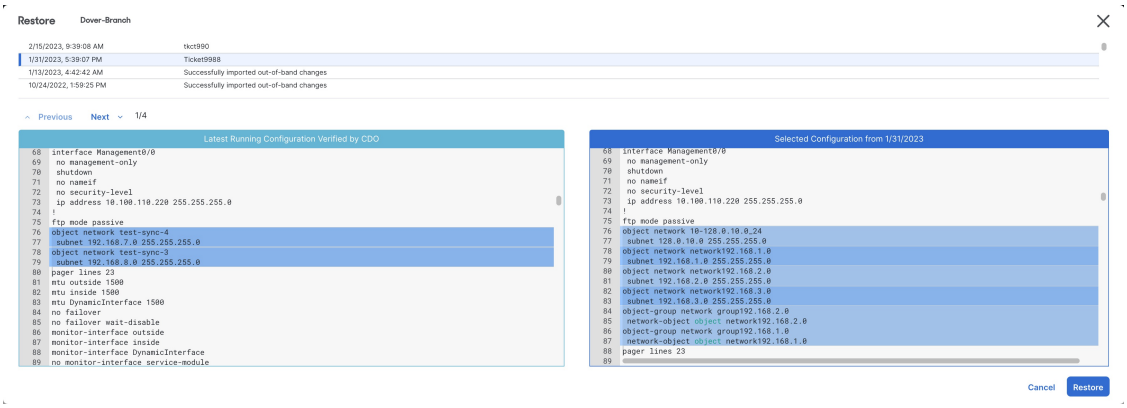
Step 3 Click the ASA tab.

Step 4 Select the ASA whose configuration it is you want to restore.

Step 5 In the **Management** pane, click **Restore.**



Step 6 In the **Restore** page, select the configuration you want to revert to.



For example, in the picture above, the configuration from 1/31/2023 is selected.

Step 7 Compare the "Latest Running Configuration Verified by Security Cloud Control" and the "Selected Configuration from <*date*>" to ensure you want to restore the configuration displayed in the Selected Configuration from <*date*> window. Use the Previous and Next to compare all the changes.

Step 8 Click **Restore,** this stages the configuration in Security Cloud Control. In the **Security Devices** page, you see that the configuration status of the device is now "Not Synced."

Step 9 Click **Deploy Changes...** in the right-hand pane to deploy the changes and sync the ASA.

Troubleshooting

How do I recover changes I lost but wanted to keep?

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.
Step 4 Click the ASA tab.
Step 5 Select the required device.
Step 6 Click **Change Log** in the right pane.
Step 7 Review the changes in the change log. You may be able to reconstruct your lost configurations from those records.

View a Device's Configuration File

The ASA stores the entire configuration in a single configuration file. You can view the configuration file using Security Cloud Control.

Procedure

Step 1 In the left pane, click **Security Devices**.
Step 2 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.
Step 3 Click the ASA device type tab.
Step 4 Select the device or model whose configuration it is you want to view.
Step 5 In the **Management** pane on the right, click **Configuration**.
The full configuration file is displayed.

Edit a Complete Device Configuration File

For these devices, you can view the device configuration file on Security Cloud Control and perform a variety of operations on it depending on the device.

Currently, only ASA configuration files can be edited directly using Security Cloud Control.



Caution This procedure is for advanced users who are familiar with the syntax of the device's configuration file. This method makes changes directly to copy of the configuration file stored on Security Cloud Control.

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.
Step 4 Click the **ASA** tab.
Step 5 Select the device whose configuration it is you want to edit.
Step 6 In the **Management** pane on the right, click **Configuration**.
Step 7 In the **Device Configuration** page, click **Edit**.
Step 8 Click the editor button on the right and select the **Default** text editor, **Vim**, or **Emacs** text editors.
Step 9 Edit the file and save the changes.
Step 10 Return to the **Security Devices** page and preview and deploy the change.

Network Address Translation

Each computer and device within an IP network is assigned a unique IP address that identifies the host. Because of a shortage of public IPv4 addresses, most of these IP addresses are private and not routable anywhere outside of the private company network. RFC 1918 defines the private IP addresses you can use internally that should not be advertised:

- 10.0.0.0 through 10.255.255.255
- 172.16.0.0 through 172.31.255.255
- 192.168.0.0 through 192.168.255.255

One of the main functions of Network Address Translation (NAT) is to enable private IP networks to connect to the Internet. NAT replaces a private IP address with a public IP address, translating the private addresses in the internal private network into legal, routable addresses that can be used on the public Internet. In this way, NAT conserves public addresses because it can be configured to advertise at a minimum only one public address for the entire network to the outside world.

Other functions of NAT include:

- Security-Keeping internal IP addresses hidden discourages direct attacks.
- IP routing solutions-Overlapping IP addresses are not a problem when you use NAT.
- Flexibility-You can change internal IP addressing schemes without affecting the public addresses available externally; for example, for a server accessible to the Internet, you can maintain a fixed IP address for Internet use, but internally, you can change the server address.
- Translating between IPv4 and IPv6 (Routed mode only)-If you want to connect an IPv6 network to an IPv4 network, NAT lets you translate between the two types of addresses.

You can use Security Cloud Control to create NAT rules for many different use cases. Use the NAT rule wizard or these topics to create different NAT rules:

Order of processing NAT rules

Network Object NAT and twice NAT rules are stored in a single table that is divided into three sections. Section 1 rules are applied first, then section 2, and finally section 3, until a match is found. For example, if a match is found in section 1, sections 2 and 3 are not evaluated. The following table shows the order of rules within each section.

Table 38: NAT Rule Table

Table Section	Rule Type	Order of Rules within the Section
Section 1	Twice NAT (ASA) Manual NAT (FTD)	Applied on a first match basis, in the order they appear in the configuration. Because the first match is applied, you must ensure that specific rules come before more general rules, or the specific rules might not be applied as desired. By default, twice NAT rules are added to section 1.
Section 2	Network Object NAT (ASA) Auto NAT (FTD)	If a match in section 1 is not found, section 2 rules are applied in the following order: **1.** Static rules. **2.** Dynamic rules. **Within each rule type, the following ordering guidelines are used:** **1.** Quantity of real IP addressesâ€”From smallest to largest. For example, an object with one address will be assessed before an object with 10 addresses. **2.** For quantities that are the same, then the IP address number is used, from lowest to highest. For example, 10.1.1.0 is assessed before 11.1.1.0. **3.** If the same IP address is used, then the name of the network object is used, in alphabetical order. For example, object "Arlington" is assessed before object "Detroit."
Section 3	Twice NAT (ASA) Manual NAT (FTD)	If a match is still not found, section 3 rules are applied on a first match basis, in the order they appear in the configuration. This section should contain your most general rules. You must also ensure that any specific rules in this section come before general rules that would otherwise apply.

For section 2 rules, for example, you have the following IP addresses defined within network objects:

- 192.168.1.0/24 (static)

- 192.168.1.0/24 (dynamic)
- 10.1.1.0/24 (static)
- 192.168.1.1/32 (static)
- 172.16.1.0/24 (dynamic) (object Detroit)
- 172.16.1.0/24 (dynamic) (object Arlington)

The resultant ordering would be:

- 192.168.1.1/32 (static)
- 10.1.1.0/24 (static)
- 192.168.1.0/24 (static)
- 172.16.1.0/24 (dynamic) (object Arlington)
- 172.16.1.0/24 (dynamic) (object Detroit)
- 192.168.1.0/24 (dynamic)

Network Address Translation wizard

The Network Address Translation (NAT) wizard helps you create NAT rules on your devices for these types of access:

- **Enable Internet Access for Internal Users**. You may use this NAT rule to allow users on an internal network to reach the internet.
- **Expose an Internal Server to the Internet**. You may use this NAT rule to allow people outside your network to reach an internal web or email server.

Prerequisites to "Enable Internet Access for Internal Users"

Before you create your NAT rule, gather this information:

- The interface that is closest to your users; this is usually called the "inside" interface.
- The interface closest to your Internet connection; this is usually called the "outside" interface.
- If you want to allow only specific users to reach the internet, you need the subnet addresses for those users.

Prerequisites to "Expose an Internal Server to the Internet"

Before you create your NAT rule, gather this information:

- The interface that is closest to your users; this is usually called the "inside" interface.
- The interface closest to your Internet connection; this is usually called the "outside" interface.
- The IP address of the server inside your network that you would like to translate to an internet-facing IP address.

- The public IP address you want the server to use.

What to do Next

See Create a NAT Rule by using the NAT Wizard, on page 108.

Create a NAT Rule by using the NAT Wizard

Before you begin

See Network Address Translation wizard, on page 107 for the prerequisites needed to create NAT rules using the NAT wizard.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Use the filter and search fields to find the device for which you want to create the NAT rule.

Step 6 In the **Management** area of the details panel, click **NAT** NAT.

Step 7 Click + > **NAT Wizard**.

Step 8 Respond to the NAT Wizard questions and follow the on-screen instructions.

- Before you can save the NAT rule, all IP addresses need to be defined as network objects.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Common use cases for NAT

Twice NAT and Manual NAT

Here are some common tasks that can be achieved using "Network Object NAT", also known as "Auto NAT":

- Enable a Server on the Inside Network to Reach the Internet Using a Public IP address, on page 109
- Enable Users on the Inside Network to Access the Internet Using the Outside Interface's Public IP Address, on page 110
- Make a Server on the Inside Network Available on a Specific Port of a Public IP Address, on page 111
- Translate a Range of Private IP Addresses to a Range of Public IP Addresses, on page 115

Network Object NAT and Auto NAT

Here is a common task that can be achieved using "Twice NAT", also know as "Manual NAT":

- Prevent a Range of IP Addresses from Being Translated When Traversing the Outside Interface, on page 117

Enable a Server on the Inside Network to Reach the Internet Using a Public IP address

Use Case

Use this NAT strategy when you have a server with a private IP address that needs to be accessed from the internet and you have enough public IP addresses to NAT one public IP address to the private IP address. If you have a limited number of public IP addresses, see Make a server on the inside network available to users on a specific port of a public IP address (that solution may be more suitable).

Strategy

Your server has a static, private IP address, and users outside your network have to be able to reach your server. Create a network object NAT rule that translates the static private IP address to a static public IP address. After that, create an access policy that allows traffic from that public IP address to reach the private IP address. Finally, deploy these changes to your device.

Before you begin

Before you begin, create two network objects. Name one object *servername*_inside and the other object *servername*_outside. The *servername*_inside network object should contain the private IP address of your server. The *servername*_outside network object should contain the public IP address of your server.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

a. Expand the Original Address menu, click **Choose**, and select the **servername_inside** object.

b. Expand the Translated Address menu, click **Choose**, and select the **servername_outside** object.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 For ASA, deploy a Network Policy rule or for FDM-managed device, deploy an access control policy rule to allow the traffic to flow from *servername*_inside to *servername*_outside.

Step 15 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Objects created by this procedure:

```
object network servername_outside
host 209.165.1.29
object network servername_inside
host 10.1.2.29
```

NAT rules created by this procedure:

```
object network servername_inside
 nat (inside,outside) static servername_outside
```

Enable Users on the Inside Network to Access the Internet Using the Outside Interface's Public IP Address

Use Case

Allow users and computers in your private network to connect to the internet by sharing the public address of your outside interface.

Strategy

Create a port address translation (PAT) rule that allows all the users on your private network to share the outside interface public IP address of your device.

After the private address is mapped to the public address and port number, the device records that mapping. When incoming traffic bound for that public IP address and port is received, the device sends it back to the private IP address that requested it.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click **Network Object NAT.**

Step 8 In section 1, **Type**, select **Dynamic.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **any** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions :

a. Expand the Original Address menu, click **Choose** and select the **any-ipv4** or **any-ipv6** object depending on your network configuration.

b. Expand the Translated Address menu, and select **interface** from the available list. Interface indicates to use the public address of the outside interface.

Step 11 For an FDM-managed device, in section 5, **Name**, enter a name for the NAT rule.

Step 12 Click **Save**.

Step 13 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Objects created by this procedure:

```
object network any_network
subnet 0.0.0.0 0.0.0.0
```

NAT rules created by this procedure:

```
object network any_network
nat (any,outside) dynamic interface
```

Make a Server on the Inside Network Available on a Specific Port of a Public IP Address

Use Case

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Prerequisites

Before you begin, create three separate network objects, one each for an FTP, HTTP, and SMTP server. For the sake of the following procedures, we call these objects **ftp-server-object**, **http-server-object**, and **smtp-server-object**.

NAT Incoming FTP Traffic to an FTP Server

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click + > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the **ftp**-server-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **ftp, ftp.**



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here is the entry that is created and appears in the ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network ftp-object
host 10.1.2.27
```

NAT rule created by this procedure

```
object network ftp-object
nat (inside,outside) static interface service tcp ftp ftp
```

NAT Incoming HTTP Traffic to an HTTP Server

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Before you begin

Before you begin, create a network object for the http server. For the sake of this procedure, we will call the object, **http-object**.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the **http**-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **http**, http.



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network http-object
host 10.1.2.28
```

NAT rule created by this procedure

```
object network http-object
nat (inside,outside) static interface service tcp www www
```

NAT Incoming SMTP Traffic to an SMTP Server

If you only have one public IP address, or a very limited number, you can create a network object NAT rule that translates inbound traffic, bound for a static IP address and port, to an internal address. We have provided procedures for specific cases, but you can use them as a model for other supported applications.

Before you begin

Before you begin, create a network object for the smtp server. For the sake of this procedure, we will call the object, **smtp-object**.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click + > **Network Object NAT.**

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, perform these actions:

- Expand the Original Address menu, click **Choose**, and select the smtp-server-object.
- Expand the Translated Address menu, click **Choose**, and select the **Interface**.
- Check **Use Port Translation**.
- Select **tcp**, **smtp**, **smtp.**



Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**. The new rule is created in section 2 of the NAT table.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

Here are the entries that are created and appear in an ASA's saved configuration file as a result of this procedure.

Note This does not apply to FDM-managed devices.

Object created by this procedure

```
object network smtp-object
host 10.1.2.29
```

NAT rule created by this procedure

```
object network smtp-object
nat (inside,outside) static interface service tcp smtp smtp
```

Translate a Range of Private IP Addresses to a Range of Public IP Addresses

Use Case

Use this approach if you have a group of specific device types, or user types, that need to have their IP addresses translated to a specific range so that the receiving devices (the devices on the other end of the transaction) allow the traffic in.

Translate a Pool of Inside Addresses to a Pool of Outside Addresses

Before you begin

Create a network object for the pool of private IP addresses you want to translate and create a network object for the pool of public addresses you want to translate those private IP addresses into.

For the ASA, the "original address" pool, (the pool of private IP addresses you want to translate) can be a network object with a range of addresses, a network object that defines a subnet, or a network group that includes all the addresses in the pool. For the FTD, the "original address" pool can be a network object that defines a subnet or a network group that includes all the addresses in the pool.

Note For the ASA FTD, the network group that defines the pool of "translated address" cannot be a network object that defines a subnet.

For the sake of the following procedure, we named the pool of private addresses, **inside_pool** and name the pool of public addresses, **outside_pool.**

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Network Object NAT**.

Step 8 In section 1, **Type**, select **Dynamic** and click **Continue**.

Step 9 In section 2, **Interfaces**, set the source interface to **inside** and the destination interface to **outside**. Click **Continue**.

Step 10 In section 3, **Packets**, perform these tasks:

- For the Original Address, click **Choose** and then select the **inside_pool** network object (or network group) you made in the prerequisites section above.
- For the Translated Address, click **Choose** and then select the **outside_pool** network object (or network group) you made in the prerequisites section above.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

These are the entries that would appear in an ASA's saved configuration file as a result of these procedures.

Note This does not apply to FDM-managed devices.

Objects created by this procedure

```
object network outside_pool
    range 209.165.1.1 209.165.1.255
object network inside_pool
    range 10.1.1.1 10.1.1.255
```

NAT rules created by this procedure

```
object network inside_pool
nat (inside,outside) dynamic outside_pool
```

Prevent a Range of IP Addresses from Being Translated When Traversing the Outside Interface

Use Case

Use this Twice NAT use case to enable site-to-site VPN.

Strategy

You are translating a pool of IP addresses to itself so that the IP addresses in one location on the network arrives unchanged in another.

Create a Twice NAT Rule

Before you begin

Create a network object or network group that defines the pool of IP addresses you are going to translate to itself. For the ASA, the range of addresses can be defined by a network object that uses an IP address range, a network object that defines a subnet, or a network group object that includes all the addresses in the range. For the FTD, the range of addresses can be defined by a network object that defines a subnet or a network group object that includes all the addresses in the range.

For the sake of the following procedure, we are going call the network object or network group, Site-to-Site-PC-Pool.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device you want to create the NAT rule for.

Step 6 Click **NAT** in the **Management** pane at the right.

Step 7 Click  > **Twice NAT.**.

Step 8 In section 1, **Type**, select **Static.** Click **Continue**.

Step 9 In section 2, **Interfaces**, choose **inside** for the source interface and **outside** for the destination interface. Click **Continue**.

Step 10 In section 3, **Packets**, make these changes:

- Expand the Original Address menu, click **Choose**, and select the Site-to-Site-PC-Pool object you created in the prerequisites section.
- Expand the Translated Address menu, click **Choose**, and select the Site-to-Site-PC-Pool object you created in the prerequisites section.

Step 11 Skip section 4, **Advanced**.

Step 12 For an FDM-managed device, in section 5, **Name**, give the NAT rule a name.

Step 13 Click **Save**.

Step 14 For an ASA, create a crypto map. See CLI Book 3: Cisco ASA Series VPN CLI Configuration Guide and review the chapter on LAN-to-LAN IPsec VPNs for more information on creating a crypto map.

Step 15 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Entries in the ASA's Saved Configuration File

These are the entries that would appear in an ASA's saved configuration file as a result of these procedures.



Note This does not apply to FDM-managed devices.

Objects created by this procedure

```
object network Site-to-Site-PC-Pool
range 10.10.2.0 10.10.2.255
```

NAT rules created by this procedure

```
nat (inside,outside) source static Site-to-Site-PC-Pool Site-to-Site-PC-Pool
```

Manage security policies in Security Cloud Control Firewall Management

Security policies examine network traffic with the ultimate goal of allowing the traffic to its intended destination or dropping it if a security threat is identified. You can use Security Cloud Control to configure security policies on many different types of devices.

Manage ASA network security policy

The ASA network security policy includes access control lists (ACLs) that determine whether to permit or deny traffic from accessing another network through the ASA firewall. This section outlines the steps to create an ASA access list and configure access rules within it. It also details the steps to assign an interface to an access control list and share it among other ASA devices managed by Security Cloud Control Firewall Management.

About ASA Access Control Lists and Access Groups

ASA Access Control Lists

Access control lists (ACLs) are used to identify traffic flows based on various characteristics such as source and destination IP address, IP protocol, ports, source, and other parameters.

The following is an access list sample:

```
access-list ACL extended permit ip any any
```

`ACL` is the name of the access list.

You can avoid the creation of the same access list on multiple devices individually, and instead create a single access list and share it across multiple ASA devices. Changes made to the shared access list automatically apply to all the devices to which the ACL is assigned. You also have the option to copy the access list to other ASA devices as needed.

Access Rules

An access list includes access rules that permit or deny traffic flow to a network based on specific characteristics such as source and destination IP addresses, IP protocol, port number, and security group tags.

ASA Access Groups

An access group is a specific association that is established when an access list is assigned to a device interface configured for traffic flow in any direction. The access list contains specific rules that either permit or deny traffic passing through the device interface.

The following is an access group sample that is created when a device interface is assigned to an access list.

```
access-group ACL out interface giginterface0
```

`ACL` is the name of the access list and `giginterface0` is the logical name of the device interface that is assigned to the access list.

Note To use API endpoints to manage your ASA access groups, see Get Access Groups on the Cisco DevNet website.

Create an ASA Access List

When configuring an access list on an ASA firewall, a rule is automatically created to allow traffic from a source to a destination outside your network. You can create additional rules and assign the access list to an interface to regulate the traffic network.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 3 In the **Management** pane on the right, click **Policy**.

Step 4 Click **Create Access List**.

Step 5 In the **Name** field, enter a name for the access list and click **Save**.

Note
You cannot have two access lists with the same name on a device.

Step 6 Click **Save**.

Security Cloud Control creates an access group and a default rule that permits all traffic.

You can now add new rules to the access list. See Add a Rule to an ASA Access List, on page 381.

To assign interfaces and traffic directions to the access list, see Assign Interfaces to ASA Access Control List, on page 383.

Add a Rule to an ASA Access List

You can add rules in ascending order by rule number. Packets will be verified against the rules in the sequence in which the rules were created, with the first rule taking precedence, followed by subsequent rules. You can adjust the position of any rule, if required.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, select an access list that you want.

Step 6 Click the **Add Rule** ( ) icon that is displayed on the right.

Note
In the ordered list, hover over the desired position and click **Add Rule Here**.

Step 7 In the **New Access Rule** window, provide the following information:

- **Order**: Select where you want to insert the rule in the ordered list of rules. Rules are applied on a first-match basis and prioritized by position in the list of rules from 1 to last.
- **Action**: Specify whether you are allowing (permitting) the described traffic or are blocking (dropping) it.
- **Protocol**: Specify the protocol of the traffic, such as IP, TCP, UDP, ICMP, or ICMPv6. The default is IP, but you can select a more specific protocol to target traffic with more granularity.
- **Source/Destination**: Define the source (originating address) and destination (target address of the traffic flow). You typically configure the IPv4 address of hosts or subnets, which you can represent with network object groups. You can assign only one object to the source or destination.
- **Port**: Select the port object that pairs a service type, such as TCP or UDP, and a port number or a range of port numbers.
- **SGT Group**: Assign the security group you want from the list. By default, the value is **Any**. See Security Group Tags in ASA Policies.
- **Time Range**: Define a time range for ASA network policies to allow access to networks and resources based on time of day.
- **Logging**: Activity resulting from a network policy rule is not logged by default. You can activate logging for individual rules. See Log Rule Activity.

Step 8 Click **Save**.

The rule is added to the access list and set to **Active** state.

Step 9 Review and deploy the changes you made now, or wait and deploy multiple changes.

About System Log Activity

When you set up a new rule, you can specify how often and at what severity level you want to collect its activity. To do this, you can select the corresponding severity levels and then choose the frequency of data collection. This will ensure that you have the necessary information to monitor and analyze the activity generated by your rules.

Note ASA does not generate syslog messages with a severity level of zero (emergencies).

You have the option to adjust the logging interval, which indicates how frequently the log records are updated. This interval is measured in seconds and can be set from 1 to 600. By default, the interval is set to 300 seconds. This interval value is also utilized as a timeout period for removing an inactive flow from the cache that collects drop statistics.

Table 39: Log Rule Activity

Security Level	Description
emergencies	System is unusable.
alert	Immediate action is needed.
critical	Critical conditions.
error	Error conditions.
warning	Warning conditions.
notification	Normal but significant conditions.
informational	Informational messages only.
debugging	Debugging messages only.

Deactivate Rules in an Access Control List

When you create a new rule in an access control list, it is activated by default. However, you can temporarily deactivate individual rules to optimize traffic flow, resolve conflicts, or isolate issues.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose the access control list you want.

Step 6 In the rule list, check the corresponding rule check box that you want.

Step 7 In the selected row, slide the **Active** setting off.

Step 8 Review and deploy the changes you made now, or wait and deploy multiple changes.

About Security Group Tags in ASA Policies

If you onboard an ASA that uses security group tags (SGT) in its access control rules, Security Cloud Control allows you to edit the rules that use SGT groups and manage the policies that have these rules. However, you cannot create SGT groups or edit them using the Security Cloud Control GUI. To create or edit SGT groups, you must use ASA's Adaptive Security Device Manager (ASDM) or the CLI available in Security Cloud Control.

In Security Cloud Control's object page, when looking at the details of SGT groups, you'll see that those objects are identified as noneditable, system-provided objects.

Security Cloud Control administrators can perform these tasks on ACLs and ASA policies that contain SGT groups:

- Edit all aspects of ACLs except the source and destination security groups.
- Copy a policy containing SGT groups from one ASA to another.

For detailed instruction, on configuring Cisco TrustSec using the command line interface, see the "ASA and Cisco TrustSec" chapter of the ASA CLI Book 2: Cisco ASA Series Firewall CLI Configuration Guide pertaining to your ASA release.

Assign Interfaces to ASA Access Control List

When you assign ASA interfaces to access control list, the device establishes a specific association between the list and interfaces. The rules that are associated with access control list are applied only to the interfaces through which the traffic flows in the specified directions.

You can only assign one access list per interface for a single traffic flow direction.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose an access list.

Step 6 In the **Actions** pane displayed on the right, click **Assign Interfaces**.

Step 7 From the **Interface** drop-down list, choose an interface.

Step 8 From the **Direction** drop-down list, specify the direction for applying the selected access list.

The designated access list is applied to the interface through which traffic flows in the specified direction. This access list can be applied to multiple interfaces and directions.

To apply the access list to all the interfaces on the ASA device, see Create an ASA Global Access List, on page 384.

Step 9 Click **Save**.

Step 10 Review and deploy the changes you made now, or wait and deploy multiple changes.

Create an ASA Global Access List

Global access policies are network policies that are applied to all the interfaces on an ASA. These policies are only applied to inbound network traffic. You can create a global access policy to ensure that a set of rules is applied uniformly to all the interfaces on an ASA.

Only one global access policy can be configured on an ASA. However, a global access policy can have more than one rule assigned to it, just like any other policy.

This is the order of rule-processing on the ASA:

1. Interface access rules
2. Bridge Virtual Interface (BVI) access rules
3. Global access rules
4. Implicit deny rules

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose an access list.

Step 6 In the **Actions** pane displayed on the right, click **Assign Interfaces**.

Step 7 Check the **Create as a global access list** check box.

Step 8 Click **Save**.

Step 9 Review and deploy the changes you made now, or wait and deploy multiple changes.

Share an ASA Access Control List with Multiple ASA Devices

Sharing access policies in network security effectively improves efficiency, consistency, and centralized management, leading to an overall improved security posture. To share an access control list across ASA

devices, create an access control list and define access rules on a single ASA device and then share it with the desired ASA devices rather than configuring them separately. This ensures consistency in the network and reduces the risk of misconfigurations. Additionally, shared access control lists provide scalability because networks grow and evolve by allowing you to manage access control lists for increasing users and ASA devices.

Keep the following points in mind:

- Access control list rules are shared, but the interfaces are not included.
- Sharing an access control list with other ASA devices will overwrite any existing access control lists with the same name.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose an access control list.

Step 6 In the **Actions** pane that is displayed on the right, click **Share**.

Step 7 Select the ASA devices by checking the corresponding check box and click **Save**.

In the **Device Relationships** pane displayed on the right, the ASA devices that share the selected access control list are displayed.

Step 8 Review and deploy the changes you made now, or wait and deploy multiple changes.

Copy an ASA Access Control List to Another ASA

An ASA access control list can be easily copied to another Security Cloud Control-managed device in the same tenant. After copying an access list file to a target ASA device, any further changes made to the access list won't be automatically applied to the target device. This is different from access control list sharing feature, where changes are automatically applied.

Keep the following points in mind:

- You cannot copy an access list to a target device if that device already has another access list with the same name.
- You cannot copy an access list if another access list on the target device is associated with the same interface and direction.
- You cannot only copy an access list to a disabled interface on the target device.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose an access list.

Step 6 In the **Actions** pane on the right, click **Copy**.

Step 7 Select the target device to which you want to copy the access list.

Step 8 Choose an interface and specify the direction for applying the selected access list.

The designated access list is applied to the interface through which traffic flows in the specified direction. This access list can be applied to multiple interfaces and directions.

To apply the access list to all the interfaces on the selected target, see Create an ASA Global Access List, on page 384.

Step 9 Click **Copy**.

A message appears at the bottom right corner on the Security Cloud Control screen on a successful copy.

Step 10 Review and deploy the changes you made now, or wait and deploy multiple changes.

Copy a Rule Within or Across ASA Access Lists and Devices

You can copy an access control rule in the following ways:

- Within the same access list.
- From one access list to another, either within the same ASA device or across different ASA devices.

Note The paste operation fails if you attempt to add a rule that already exists in the access list.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 3 In the **Management** pane on the right, click **Policy**.

Step 4 From the **Selected Access List** drop-down list, select an access list that you want.

Step 5 Select a rule by clicking the corresponding check box and in the **Actions** pane on the right, click **Copy**.

Step 6 Perform the following:

- To paste the rule within the same access list, hover the mouse pointer in the desired position until you see the **Paste Rule Here** option and click it. The Add/Edit rule dialog box is displayed, allowing you to modify the copied rule, as identical rules are not permitted in the same access list.
- To paste the rule within the same ASA device, from the **Selected Access List** drop-down list, select an access list you want.
- To paste the rule to a different ASA device, in the left pane, go to **Security Devices** > select an ASA device > **Policy** > **Selected Access List**.

Step 7 To paste the copied rule in the desired position, select a rule that comes after where you want the new rule to be. In the **Actions** pane on the right, click **Paste**. The copied rule will be inserted before the selected rule.

You can use the **Move Up** and **Move Down** buttons to position the rule as needed.

Note
Alternatively, you can hover over a desired position in the rule listing table until you see **Paste Rule Here**, and then click it.

Unshare a Shared ASA Access Control List

If the rules governing the interface handling your network become outdated, you can unshare the access control list from the devices currently linked. Unsharing an ASA device from the shared access control list will not have any impact on other ASA devices currently sharing this list.

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.
Step 4 In the **Management** pane on the right, click **Policy**.
Step 5 From the **Selected Access List** drop-down list, choose an access list.
Step 6 In the **Actions** pane on the right, click **Share**.
Step 7 Uncheck the ASA devices that share the selected access list and click **Save**.
Step 8 Review and Deploy the changes you made now, or wait and deploy multiple changes.

View ASA Access Policies Listing Page

The ASA access policy listing page shows a comprehensive overview of all access lists associated with the ASA devices that have been onboarded to the Security Cloud Control tenant.

Note

Click the filter ( ) button, then click **Filter by Device** to search for policies that are either shared across multiple ASA devices or specific to a single ASA device.

Procedure

Step 1 In the left pane, choose **Policies > ASA Access Policies**click **Policies** > **ASA** > **Access Policies**.

The page provides the following information:

- **Name**: The name of the access list.
- **Device**: The corresponding ASA devices associated with each access list. Additionally, for access lists that are shared across multiple devices, it displays a list of all ASA devices that use the shared access list.

  Click the button to view the ASA devices associated with the selected access list.

  To navigate to the policy page of the selected device, click **View Policies**. You can create or edit an access list.

  To return to this page, click **ASA Access Policies**.
- **Interfaces**: The network interfaces to which each access list is assigned.

Step 2 To view the ASA devices associated with an access list, click the corresponding button in the **Device** column.

Step 3 To navigate to the policy page of the selected device, click **View Policies**. You can create or edit an access list.

Step 4 To return to the policy listing page, in the top-left corner, click ← **ASA Access Policies**.

Global Search of ASA Access Lists

Use the global search functionality to search the following in your Security Cloud Control tenant:

- ASA devices and all their associated access lists.
- Access lists or shared access lists and their occurrences across all onboarded ASA devices.

Rename an ASA Access Control List

It is possible to modify the name of an access list to suit your specific needs. Whether you want to rename a global access list or a shared access control list, it is a straightforward process. If the access list is shared, changing its name updates the name on all the other devices where the shared access control list is used. Remember that the updated name will only reflect after the configuration is deployed to those devices.

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.
Step 4 In the **Management** pane on the right, click **Policy**.
Step 5 From the **Selected Access List** drop-down list, choose an access list that you want to rename.
Step 6 Click the **Rename** ( ) icon in the right pane.
Step 7 Click the **Save** ( ) button.
Step 8 Review and deploy the changes you made now, or wait and deploy multiple changes.

Delete a Rule from an ASA Access Control List

You can remove access rules from the access list, but at least one rule must remain for the list to exist.

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.
Step 4 In the **Management** pane on the right, click **Policy**.
Step 5 Click an access list and select the rules to be deleted.
Step 6 In the **Actions pane** on the right, click **Remove**.
Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Delete an ASA Access Control List

This procedure can be used to delete the access control list, shared access list, or a global access list. Deleting a shared access list from one device does not impact other devices where the access list is in use. On those devices, the access list persists as a local access list.

Procedure

Step 1 In the left pane, click **Inventory**.
Step 2 In the left pane, click **Security Devices**.
Step 3 Click the **ASA** tab and select an ASA device by checking the corresponding check box.

Step 4 In the **Management** pane displayed on the right, click **Policy**.

Step 5 From the **Selected Access List** drop-down list, choose an access list you want to delete.

Step 6 In the **Actions** pane on the right, click **Delete**.

Step 7 Review and deploy the changes you made now, or wait and deploy multiple changes at once.

Compare ASA network policies

Procedure

Step 1 In the navigation pane, select **Policies> ASA Policies**.

Step 2 In the left pane, click **Policies** > **ASA** > **Access Policies**.

Step 3 Click **Compare** in the top right corner of the viewer.

Step 4 Select up to two policies to compare.

Step 5 Click **View Comparison** at the bottom of the viewer. This will bring up the comparison viewer. When you are finished, click **Done** and then **Done Comparing**.

Hit rates

Security Cloud Control enables you to evaluate the outcome of policy rules, on top of secure and scalable orchestration of policies, providing a simple visualization for more accurate policy analysis and an immediate, actionable pivot to root cause, all in a single pane from the cloud. The Hit Rates feature enables you to:

- Eliminate obsolete and never-matched policy rules, increasing security posture.
- Optimize firewall performance by instantly identifying bottlenecks as well as ensuring correct and efficient prioritization is enforced (for example, most triggered policy rule is prioritized higher).
- Maintain a history of Hit Rates information, even upon device or policy rule reset, for a configured data retention period (1 year).
- Strengthen validation of suspected shadow and unused rules based on actionable information. Removing doubt about update or delete.
- Visualize policy rule usage in the context of the entire policy, leveraging predefined time intervals (day, week, month, year) and scale of actual hits (zero, >100, >100k, etc.) to evaluate impact on packets traversing the network.

View Hit Rates of ASA Policies

Procedure

Step 1 Select **Policies** > **ASA Access Policies** from the Security Cloud Control menu bar.

Step 2 In the left pane, click **Policies** > **ASA** > **System Settings**.

Step 3 Click the filter icon and pin it open.

Step 4 In the Hits area, click the various hit count filters to display which policies are being hit more or less often than others.

Search and filter ASA network rules in the access list

Search

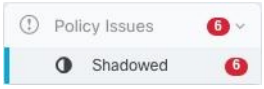
Use the search bar to search for names, keywords, or phrases in the names of the rules within the access list. Search is not case-sensitive.

Filter

Use the filter sidebar to find network policy issues. Filtering is not additive, each filter setting acts independently of the other.

Policy Issues

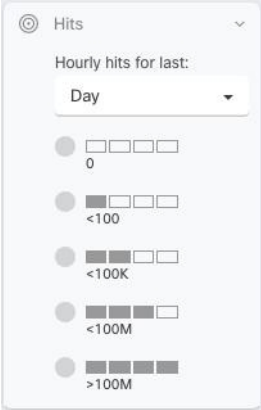
Security Cloud Control identifies network policies that contain shadow rules. The number of policies that contain shadow rules is indicated in the **Policy Issues** filter:



Security Cloud Control marks shadowed rules and network policies that contain them with the shadow badge shadow_badge.png on the network policies page. Click Shadowed to view all the policies containing shadow rules. See Shadow Rules for more information.

Hits

Use this filter to find rules across the access lists that have been triggered a number of times over a specified period.



Filter Use Cases

Find all rules that have zero hits

If you have rules without any hits, you can edit them to make them more effective or simply delete them.

1. Select an ASA device and in the **Management** pane on the right, click **Policy**.
2. Above the rule table, click **Clear** to clear any existing filters.
3. Click the filter icon and expand the **Hits** filter.
4. Select a time period.
5. Select 0 hits.

Find out how often rules in a network policy are being hit

1. Select an ASA device and in the **Management** pane on the right, click **Policy**.
2. Above the rule table, click **Clear** to clear any existing filters.
3. Click the filter icon and expand the **Hits** filter.
4. Select a time period.
5. Select the different hits filters to see what category the different rules fall into.

Filter network policies by hit rate

1. Select an ASA device and in the **Management** pane on the right, click **Policy**.
2. Above the rule table, click **Clear** to clear any existing filters.
3. Click the filter icon and expand the **Hits** filter.
4. Select a time period.
5. Select the different hit rate categories. Security Cloud Control displays the rules that are getting hit at the rate you specify.

Shadowed rules

A network policy with shadowed rules is one in which at least one rule in the policy will never trigger because a rule that precedes it prevents the packet from being evaluated by the shadowed rule.

For example, consider these network objects and network rules in the "example" network policy:

```
object network 02-50
range 10.10.10.2 10.10.10.50
object network 02-100
range 10.10.10.2 10.10.10.100
```

```
access-list example extended deny ip any4 object 02-50
access-list example extended permit ip host 10.10.10.35 object 02-50
access-list example extended permit ip any4 object 02-100
```

No traffic is evaluated by this rule,

```
access-list example extended permit ip host 10.10.10.35 object 02-50
```

because the previous rule,

```
access-list example extended deny ip any4 object 02-50
```

denies any ipv4 address from reaching any address in the range 10.10.10.2 - 10.10.10.50.

Find Network Policies with Shadowed Rules

To find network policies with shadowed rules, use the network policies filter:

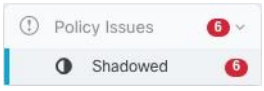
Procedure

Step 1 In the navigation pane, click **Policies** > **ASA Policies**.

Step 2 In the left pane, click **Policies** > **ASA** > **Access Policies**.

Step 3 Click the filter icon at the top of the ASA Access Policies table.

Step 4 In the Policy Issues filter, check **Shadowed** to view all the policies with shadowed rules.



Resolve Issues with Shadowed Rules

This is how Security Cloud Control displays the rules described in the "example" network policy above:



The rule on line 1 is marked with a shadow warning badge ⚠ because it's shadowing another rule in the policy. The rule on line 2 is marked as being shadowed ◑ by another rule in the policy. The action for the rule on line 2 is grayed-out because it's entirely shadowed by another rule in the policy. Security Cloud Control is able to tell you which rule in the policy shadows the rule in line 2.

The rule on line 3 can only be triggered some of the time. This is a partially shadowed rule. Network traffic from any IPv4 address trying to reach an IP address in the range 10.10.10.2-10.10.10.50 would never be evaluated because it would have already been denied by the first rule. However, any IPv4 address attempting to reach an address in the range 10.10.10.51-10.10.10.100 would be evaluated by the last rule and would be permitted.

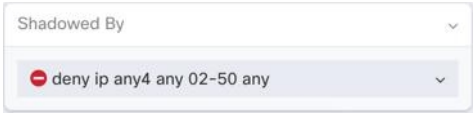
⚠

Caution Security Cloud Control does not apply a shadow warning badge ⚠ to partially shadowed rules.

Procedure

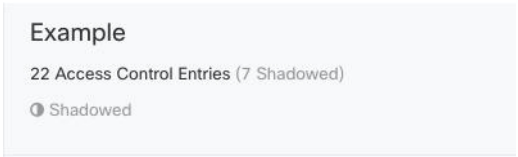
Step 1 Select the shadowed rule in the policy. In the example above, that means clicking on line 2.

Step 2 In the rule details pane, look for the **Shadowed By** area. In this example, the **Shadowed By** area for the rule in line 2 shows that it is being shadowed by the rule in line 1:



Step 3 Review the shadow*ing* rule. Is it too broad? Review the shadow*ed* rule. Do you really need it? Edit the shadow*ing* rule or delete the shadow*ed* rule.

Note
By deleting shadowed rules, you reduce the number of access control entries (ACEs) on your ASA. This frees up space for the creation of other rules with other ACEs. Security Cloud Control calculates the number of ACEs derived from all the rules in a network policy and displays that total at the top of the network policy details pane. If any of the rules in the network policy are shadowed, it also lists that number.

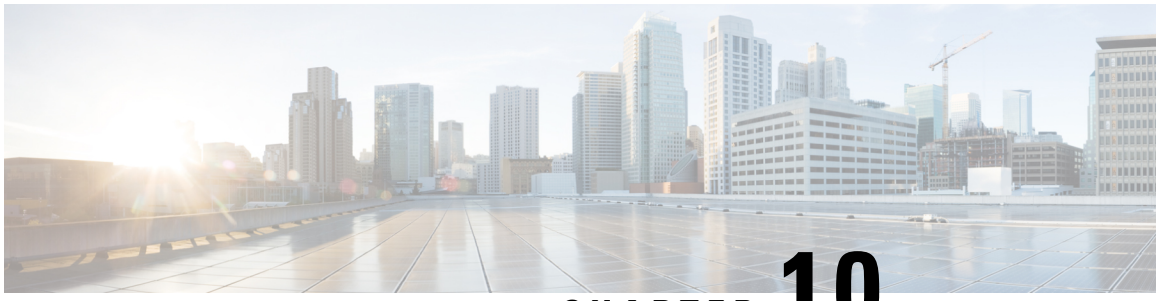


Security Cloud Control also displays the number of ACEs derived from a single rule in a network policy and displays that information in the network policy details pane. Here is an example of that listing:



Step 4 Determine which devices use the policy by looking in the Devices area of the network policy details pane.

Step 5 Open the **Security Devices** page and **Deploy Changes** back to the devices affected by the policy change.



CHAPTER 10

Configure Cloud-Delivered Firewall Management Center-Managed Secure Firewall Threat Defense

This chapter provides information on how to manage the Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense onboarded to Security Cloud Control.

- Security Cloud Control Firewall Management Integrations Page , on page 397
- Navigate to the Cloud-Delivered Firewall Management Center in your Security Cloud Control Tenant, on page 401
- Enable Cloud-Delivered Firewall Management Center , on page 401

Security Cloud Control Firewall Management Integrations Page

The **Integrations** page provides a comprehensive view of your managed infrastructure within Security Cloud Control Firewall Management:

- **FMC** tab:
  - View the Cloud-Delivered Firewall Management Center that is linked to the Security Cloud Control Firewall Management account. Refer to Request a Cloud-delivered Firewall Management Center for your Security Cloud Control tenant .
  - View which on-premises Firewall Management Centers are onboarded to Security Cloud Control Firewall Management. Devices managed by these on-premises Firewall Management Centers appear in **Security Devices**. Refer to Managing On-Prem Firewall Management Center with Security Cloud Control.
  - Lists the **Secure Device Connector** and **Secure Event Connector** available under the **Secure Connectors**. Refer to Secure Device Connector and Secure Event Connectors.

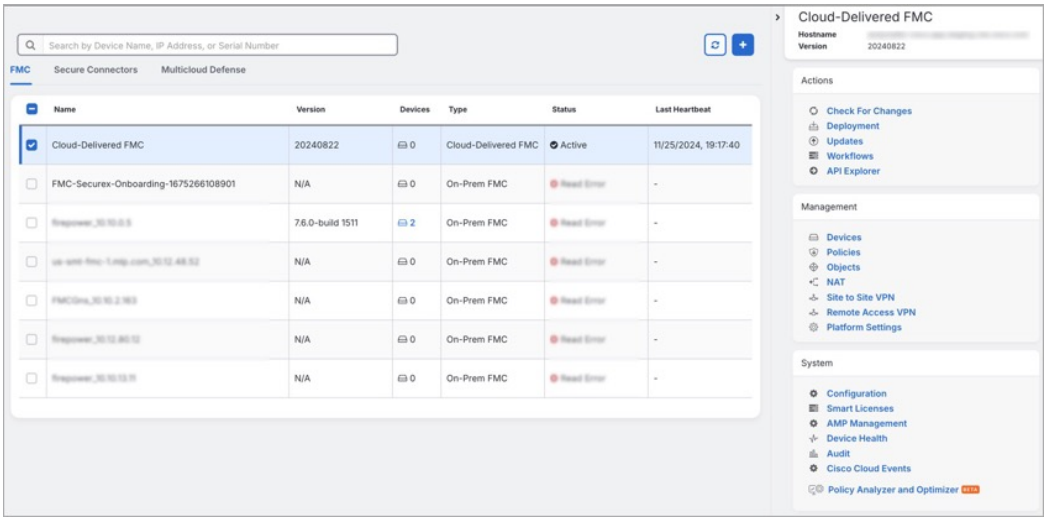
Security Cloud Control. page. The **Integrations** page also lists tab.

Click the **FMC** tab, then click **Onboard FMC** ( ) icon to onboard an on-premises Firewall Management Center. In the right pane, perform device actions as needed. Refer to Onboard an On-Prem Firewall Management Center.

View device information, including version, device count, device type, and synchronization status. Click the managed devices icon to go to the **Security Devices** page. Devices managed by the selected on-premises Firewall Management Center are filtered and displayed. On the **Integrations** page, select multiple on-premises

Firewall Management Center to perform actions on several management centers at once. Deselect the Cloud-Delivered Firewall Management Center before selecting other on-premises Firewall Management Center. To add a new secure connector or perform actions on existing secure connectors, choose the **Secure Connectors** tab and click .

In the left pane, click **Administration** > **Firewall Management Center**.



For your Cloud-Delivered Firewall Management Center, the Integrations page displays this information:

- If you do not have a Cloud-Delivered Firewall Management Center deployed on your tenant, click **Enable Cloud-Delivered FMC**. Refer to Enable Cloud-Delivered Firewall Management Center on Your Security Cloud Control Tenant for more information.
- The number of Secure Firewall Threat Defense devices deployed on the Cloud-Delivered Firewall Management Center.
- Status of the connection between Security Cloud Control and the Cloud-Delivered Firewall Management Center page.
- The last heartbeat of the Cloud-Delivered Firewall Management Center. This time shows when the Cloud-Delivered Firewall Management Center's status and device count last synchronized with the table on this page..
- The hostname of the selected Cloud-Delivered Firewall Management Center.

Choose **Cloud-Delivered FMC** and using the links in the **Actions** , **Management**, or **Settings** pane, you open the Cloud-Delivered Firewall Management Center user interface to perform the configuration tasks that are associated with the link you clicked.

Actions:

- **Check For Changes**: The Device Count and Status information in the table is updated with the information available the last time this page and the Cloud-Delivered Firewall Management Center were synchronized. Synchronization happens every 10 minutes.
- **Deployment**: Takes you to the device configuration deployment page on Cloud-Delivered Firewall Management Center. Refer to Deploy Configuration Changes.

- **Workflows**: Takes you to the **Workflows** page to monitor every process that Security Cloud Control runs when communicating with devices. Refer to Workflows page.
- **API Explorer**: Takes you to the page that lists the Cloud-Delivered Firewall Management Center REST APIs. Refer to Secure Firewall Management Center REST API Guide .
- **Unified Events**: Takes you to the **Unified Events** page on the Cloud-Delivered Firewall Management Center portal, which provides a single-screen view of various firewall events, including connection, intrusion, file, malware, and security-related connection events. For more information, refer to Unified Events .



Note The Unified Events feature requires activation. If you have not yet activated this feature, contact your Cisco sales representative to enable it.

Management:

- **Devices**: Takes you to the Firewall Threat Defense device listing page on the Cloud-Delivered Firewall Management Center portal. Refer to Configure Devices.
- **Policies**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to edit system-provided access control policies and create custom access control policies. Refer to Manage Access Control Policies.
- **Objects**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to manage reusable objects. Refer to Object Management.
- **NAT**: Takes you to the policies page on the Cloud-Delivered Firewall Management Center portal to configure Network Address Translation policies on the Firewall Threat Defense devices. Refer to Manage NAT policies.
- **Site to Site VPN**: Takes you to the site-to-site VPN dashboard page on the Cloud-Delivered Firewall Management Center portal to configure site-to-site VPN policy between two sites. Refer to Site-to-Site VPNs.
- **Remote Access VPN**: Takes you to the remote access VPN dashboard page on the Cloud-Delivered Firewall Management Center portal to configure a remote access VPN configuration. Refer to Remote Access VPN.
- **Platform Settings**: Takes you to the platform settings page on the Cloud-Delivered Firewall Management Center portal to configure a range of unrelated features whose values you might want to share among several devices. Refer to Platform Settings.

System:

- **Configuration**: Takes you to the system configuration settings page on the Cloud-Delivered Firewall Management Center portal to configure system configuration settings. Refer to System Configuration .
- **Smart Licenses**: Takes you to the smart licenses page on the Cloud-Delivered Firewall Management Center portal to assign licenses to devices. Refer to Assign Licenses to Devices.
- **AMP Management**: Takes you to the AMP management page on the Cloud-Delivered Firewall Management Center portal that supplies data the system uses to detect and block malware on your network. Refer to Cloud Connections for Malware Protection.

- **Device Health**: Takes you to the health monitoring page on the Cloud-Delivered Firewall Management Center portal, which tracks various health indicators to ensure the hardware and software in the system are working correctly. Refer to About Health Monitoring.
- **Audit**: Takes you to the audit log page on the Cloud-Delivered Firewall Management Center portal to show the generated audit record for each user interaction with the web interface.
- **Cisco Cloud Events**: Takes you to the configure Cisco Cloud events page on the Security Cloud Control portal to configure Cloud-Delivered Firewall Management Center to send events directly to SAL (SaaS). Refer to Send Events to SAL (SaaS).

After you open the Cloud-Delivered Firewall Management Center page, click the blue question mark button and select **Page-level Help** for more information.

Support to open Security Cloud Control and Cloud-Delivered Firewall Management Center applications in separate tabs

As you configure Firewall Threat Defense devices or objects in Cloud-Delivered Firewall Management Center , you can open the appropriate configuration pages in additional browser tabs to work simultaneously in the Security Cloud Control and the Cloud-Delivered Firewall Management Center portals without logging off.

For example, you can create an object on Cloud-Delivered Firewall Management Center and simultaneously monitor event logs on Security Cloud Control that are generated from the security policies.

This feature is available for all Security Cloud Control links that navigate to the Cloud-Delivered Firewall Management Center portal. To open the Cloud-Delivered Firewall Management Center portal in a new tab:

On the Security Cloud Control portal, press and hold the Ctrl (Windows) or Command (Mac) button, then click the corresponding link.

Note A single click opens the Cloud-Delivered Firewall Management Center page in the same tab.

Here are some examples of opening the Cloud-Delivered Firewall Management Center portal page in a new tab:

- Choose **Administration** > **Firewall Management Center** and select **Cloud-Delivered FMC**. In the right pane, press and hold the Ctrl (Windows) or Command (Mac) button, and then click the page that you want to access.
- Choose **Objects** > **Other FTD Objects**.
- Click the search icon on the Security Cloud Control page and enter your search terms in the search field.

  From the search result, press and hold the Ctrl (Windows) or Command (Mac) button, and then click the arrow icon.
- Choose **Dashboard** > **Quick Actions**. Press and hold the Ctrl (Windows) or Command (Mac) button, and then click **Manage FTD Policies** or **Manage FTD Objects**.

Note If you switch to a new Security Cloud Control tenant, the Cloud-Delivered Firewall Management Center portal open in another tab logs out automatically.

Navigate to the Cloud-Delivered Firewall Management Center in your Security Cloud Control Tenant

Procedure

Step 1 In the left pane, click **Administration** > **Integrations** > **Firewall Management Center** to view the **Services** page.

The **Services** page displays the information about the Cloud-Delivered Firewall Management Center provisioned for the Security Cloud Control tenant.

Step 2 Choose **Cloud-Delivered FMC** and click the links in the **Actions**, **Management**, or **Settings** pane to navigate to Cloud-Delivered Firewall Management Center to perform various actions. See Security Cloud Control Firewall Management Integrations Page , on page 12.

Once in the Cloud-Delivered Firewall Management Center, click the blue question mark button and select **Page-level Help** to learn more about the page you are on and further action you can take.

Enable Cloud-Delivered Firewall Management Center

If you want to manage your Secure Firewall Threat Defense devices, you can enable the Cloud-Delivered Firewall Management Center on your tenant. You need to have an admin or a super admin user role to perform this task.

Procedure

From the Security Cloud Control menu, click **Tools & Services** > **Firewall Management Center** >  > **FMC** > **Enable Cloud-Delivered FMCAdministration** > **Integrations** > **Firewall Management Center** and click **Enable Cloud-Delivered FMC**.

Security Cloud Control starts provisioning a Cloud-Delivered Firewall Management Center instance in the background; it typically takes 15 to 30 minutes for this to be complete. You can track the provisioning progress on the **Status** column of **Cloud-Delivered FMC**.

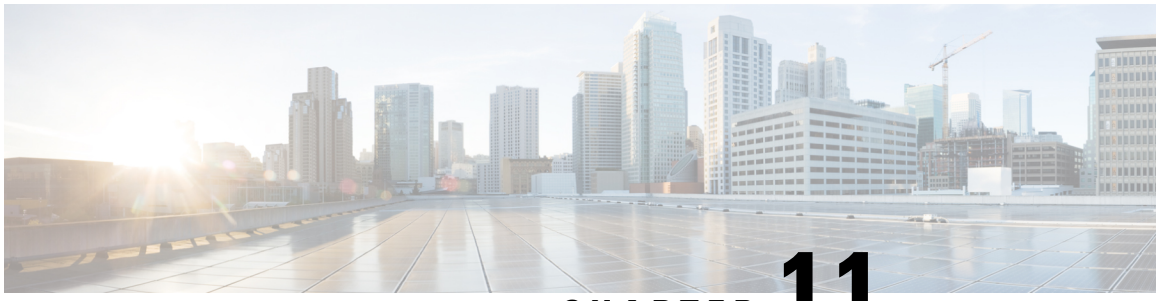
After the provisioning is complete, the status changes to **Active**. In addition, you get a **Cloud-Delivered Firewall Management Center is Ready** notification on the Security Cloud Control notifications panel and on the applications on which you have configured incoming webhooks. See Notification Settings for more information.

Note
After you receive the **Cloud-Delivered Firewall Management Center is Ready** notification, ensure that you log out of and log in back to your tenant once, to see the **Cloud-Delivered FMC** right pane options, such as **Actions**, **Management**, and **System**.

What to do next:

a. Register Cloud-Delivered Firewall Management Center with Cisco Smart Software Manager (CSSM) to activate smart license. For detailed steps, refer to Register the Cloud-Delivered Firewall Management Center with the Smart Software Manager.

b. Onboard your Firewall Threat Defense devices to the Cloud-Delivered Firewall Management Center and manage them.



CHAPTER 11

Configure On-Premises Firewall Management Center-Managed Threat Defense Devices

This chapter provides steps to configure On-Premises Firewall Management Center-managed Threat Defense devices.

- View onboarded On-Premises Firewall Management Center, on page 403
- Discover and manage On-Premises Firewall Management Center network objects, on page 404
- Preview and deploy On-Premises Firewall Management Center configurations, on page 405
- Discard On-Premises Firewall Management Center configuration changes, on page 406

View onboarded On-Premises Firewall Management Center

To view onboarded On-Premises Firewall Management Centers, perform these steps:

1. Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**.
2. Click the **FMC** tab.

View On-Premises Firewall Management Center high-availability pair

The high-availability pair is displayed in the **Services** page. When you expand the pair, you can see the primary and secondary on-premises Firewall Management Center nodes and their current statuses.

To cross-launch the active on-premises Firewall Management Center, perform these steps:

1. In the **Services** page, check the corresponding high-availability pair.
2. Click the option you want to open in on-premises Firewall Management Center.

   The **Verify FMC Cross Launch URL** window is displayed. By default, the public IP address or FQDN of the currently active on-premises Firewall Management Center is shown and will be used to open on-premises Firewall Management Center. If necessary, specify the URL of the standby on-premises Firewall Management Center to launch it.

Add cross-launch URLs to each on-premises Firewall Management Center node. When you launch from the pair, only the active node is launches. Verifying which node is currently active is not necessary.

To cross-launch to a specific on-premises Firewall Management Center node, perform these steps:

1. Expand the high-availability pair and click primary or secondary on-premises Firewall Management Center node you want to launch.
2. In the **External Links** pane, click **FMC Cross Launch URL** to cross-launch the selected on-premises Firewall Management Center.

   To update the public IP address or the FQDN and the port number of your on-premises Firewall Management Center hover over the **FMC Cross Launch URL** and click the edit icon.

Note If high availability is broken or roles are switched on on-premises Firewall Management Center (version 7.4.x or earlier), disable the SecureX integration, then enable it again on the secondary on-premises Firewall Management Center. To complete this task, navigate to the secondary on-premises Firewall Management Center and choose the appropriate option.

If you break a high-availability on-premises Firewall Management Center pair, the participating management centers become two standalone on-premises Firewall Management Centers.

Discover and manage On-Premises Firewall Management Center network objects

If you have an on-premises Firewall Management Center that you manage using Security Cloud Control and you want to share and manage its objects, perform this procedure:

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center** to view the **Services** page.

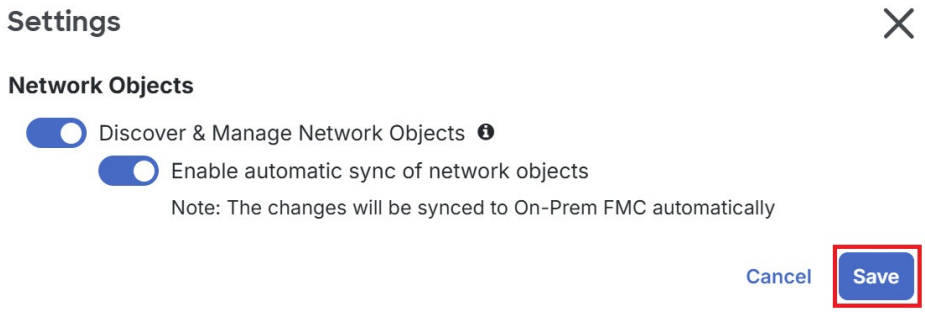
Step 2 If you have already onboarded an on-premises Firewall Management Center to Security Cloud Control, select it.

If you want to onboard a new on-premises Firewall Management Center, see Onboard an On-Prem Firewall Management Center.

Step 3 Choose **Settings** from the **Actions** pane. The **Actions** pane does not appear when you select more than one on-premises Firewall Management Center.

Note
You must be an admin or super admin to use **Settings**.

Step 4 Enable the **Discover & Manage Network Objects** toggle button. To automatically synchronize your changes with on-premises Firewall Management Center instead of staging them for review, turn on the **Enable automatic sync of network objects** toggle button. Then, click **Save**.



Note

- You cannot enable the **Discover & Manage Network Objects** toggle button if the selected on-premises Firewall Management Center has one or more child domains or if it has the Change Management workflow enabled.
- You cannot enable the **Enable automatic sync of network objects** toggle button if the **Discover & Manage Network Objects** toggle button is disabled.

For every new on-premises Firewall Management Center onboarded to Security Cloud Control, this toggle button needs to be enabled manually. After you enable this option, Security Cloud Control discovers objects from your on-premises Firewall Management Center. You can then share and manage these objects, and use them to set consistent object definitions across other platforms managed by Security Cloud Control.

In Security Cloud Control, when you add overrides to objects that are discovered from an on-premises Firewall Management Center and push the changes back, these objects can now be overridden, even if overrides were not allowed previously. The **Allow Overrides** check box in the **View Network Object** window is selected automatically when an override is added from Security Cloud Control.

Note
If you want to assign already-existing objects in Security Cloud Control to your on-premises Firewall Management Center, choose the on-premises Firewall Management Center and click **Assign Objects** from the **Actions** pane.

Preview and deploy On-Premises Firewall Management Center configurations

If you have made configuration changes to an object, such as changing a value or adding an override to an object, you can deploy all those changes at once to your on-premises Firewall Management Center.

Note This task deploys configuration changes only to on-premises Firewall Management Center. To deploy these changes to your Firewall Threat Defense devices, you must deploy these changes manually from your on-premises Firewall Management Center. For more information, see Configuration Deployment in the *Cisco Secure Firewall Management Center Device Configuration Guide*.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**

Step 2 Click the **FMC** tab.

Step 3 Select the on-premises Firewall Management Center where you want to preview and deploy changes.

Note
Security Cloud Control identifies when your on-premises Firewall Management Center is out of sync and displays the status as **Not Synced**.

Step 4 Click **Preview and Deploy** on the details pane.

Step 5 Review any warnings. To deploy immediately, click **Deploy Now**. If you do not want to proceed, click **Discard All**.

Step 6 Alternatively, click the download button at the top-right corner of the screen to open the **Devices with Pending Changes** window. Select the devices, review the pending changes on the selected devices, and then deploy them.

Step 7 Click **Deploy Now** to deploy the changes.

Discard On-Premises Firewall Management Center configuration changes

To undo all configuration changes you made in Security Cloud Control, such as changes to objects shared between your Security Cloud Control and on-premises Firewall Management Center, follow this procedure. When you perform this task, Security Cloud Control *completely overwrites* its local configuration copy with the configuration stored on the device.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**.

Step 2 Click the **FMC** tab.

Step 3 Select the on-premises Firewall Management Center for which you want to discard changes.

Step 4 Click **Discard Changes** in the **Not Synced** pane.

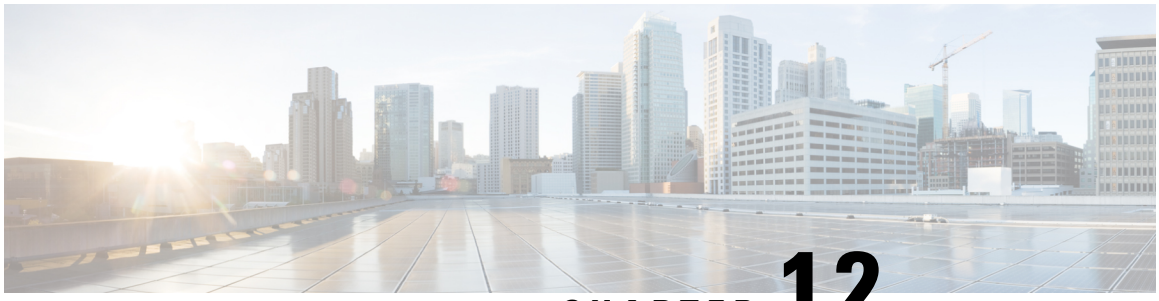
When you click **Discard Changes**, your on-premises Firewall Management Center configuration status changes to **Not Synced**. After you discard your changes, the configuration copy stored in Security Cloud Control matches the configuration on on-premises Firewall Management Center. The status in Security Cloud Control then returns to **Synced**.



PART IV

Dynamic Attributes Connector

- About Dynamic Attributes Connector, on page 409
- Configure the Dynamic Attributes Connector, on page 411
- Dynamic firewall, on page 445
- Use Dynamic Objects in Access Control Policies, on page 461
- Troubleshoot the Dynamic Attributes Connector, on page 465



CHAPTER 12

About Dynamic Attributes Connector

- About the Dynamic Attributes Connector , on page 409

About the Dynamic Attributes Connector

The dynamic attributes connector enables your access control policy to adapt in real time to the changes in public and private cloud workloads and business-critical software-as-a-service (SaaS) applications. It simplifies policy management by keeping rules up to date without tedious manual updates and policy deployment. Customers require policy rules to be defined based on non-network constructs such as VM name or security group, so that firewall policy is persistent even when the IP address or VLAN changes.

Supported connectors

We currently support:

Table 40: List of supported connectors by dynamic attributes connector version and platform

CSDAC version	AWS	AWS security groups	AWS service tags	Azure	Azure Service Tags	Cisco Cyber Vision	Cisco Multicl. Defense	Generic text	GitHub	Google Cloud	Microsoft Office 365	vCenter	Tenable	Webex	Zoom
Version 1.1 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	No
Version 2.0 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No
Version 2.2 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
Version 2.3 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Version 3.0 (on-premises)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

More information about connectors:

- Generic text list of IP addresses you specify

  For more information, see Create a generic text connector, on page 430.

- GitHub

For more information, see Create a GitHub connector, on page 434.

- Google Cloud

  For more information, see Setting Up Your Environment in the Google Cloud documentation.

  See Google cloud connector user permissions and imported data, on page 435.

- Webex IP addresses

  For more information, see Create a Webex connector, on page 438.

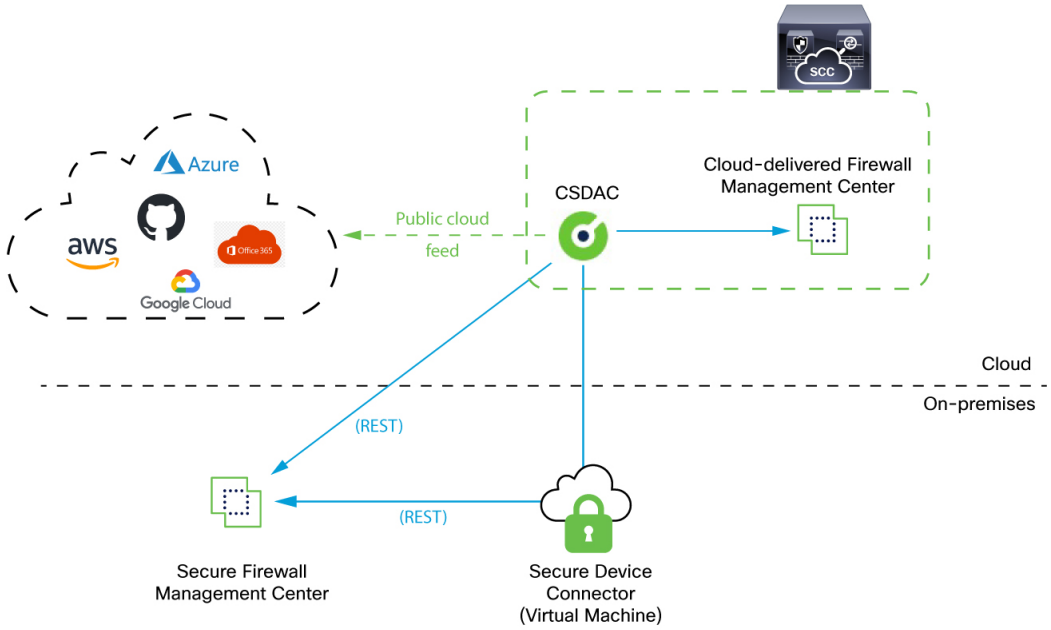
- Zoom IP addresses

  For more information, see Create a Zoom connector, on page 439.

How It Works

This topic discusses the architecture of the dynamic attributes connector.

The following figure shows how the system functions at a high level.



- The system supports certain public cloud providers.

  This topic discusses supported *connectors* (which are the connections to those providers).

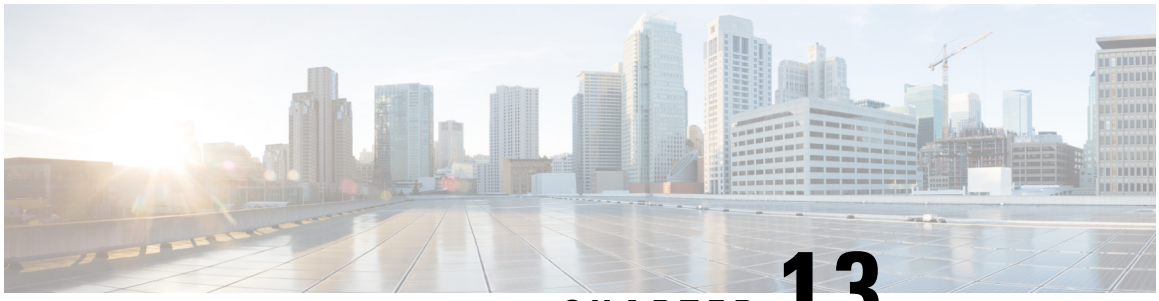
- The *adapter* defined by the dynamic attributes connector receives those dynamic attributes filters as *dynamic objects* and enables you to use them in access control rules.

  You can create the following types of adapters:

  - for an on-premises device.

    This type of device might be managed by Security Cloud Control or it might be a standalone.

  - *Cloud-Delivered Firewall Management Center* for devices managed by Security Cloud Control.



CHAPTER 13

Configure the Dynamic Attributes Connector

- Dashboard, on page 411
- Connectors, on page 417
- Create an adapter, on page 440
- Create dynamic attributes filters, on page 442

Dashboard

Dashboard capabilities include:

- Add, edit, and delete connectors,dynamic attributes filters, and adapters.
- See how connectors,dynamic attributes filters, and adapters are related to each other.
- View warnings and errors.

Dashboard access and functionality

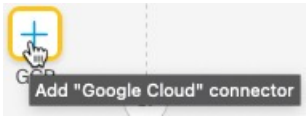
If the dynamic attributes connector is not enabled, move the slider to enable it. This process could take several minutes to complete.

The dynamic attributes connector Dashboard page displays an example of an unconfigured system:

Dashboard of an unconfigured system

This sample dynamic attributes connector Dashboard page shows how an unconfigured system appears initially.

The Dashboard initially displays all the types of connectors and adapters you can configure for your system. You can do any interaction:

- Hover the mouse pointer over a connector or adapter and click 

to create a new one.
- Click **Go to Connectors** to add, edit, or delete connectors (good for creating, editing, or deleting multiple connectors at the same time).

  For more information, see Connectors, on page 417.

- Click **Go to Adapters** to add, edit, or delete adapters (good for creating, editing, or deleting multiple adapters at the same time).

  For more information, see Create an adapter, on page 440.

Related Topics:

- Dashboard of a configured system, on page 412
- Add, edit, or delete connectors, on page 412
- Add, edit, or delete dynamic attributes filters, on page 414
- Add, edit, or delete adapters, on page 416

Dashboard of a configured system

Sample dynamic attributes connector Dashboard page of a configured system displays at-a-glance information about configured connectors, filters, and adapters.

The Dashboard shows the following (from left to right):

Note Some connectors, such as Outlook 365 and Azure Service tags, automatically pull available dynamic objects without the need for a dynamic attributes filters. Those connectors display **Auto** in the column.

The Dashboard indicates whether or not an object is available. The Dashboard page is refreshed every 15 seconds but you can click **Refresh** ( ) at the top of the page at any time to refresh immediately. If issues persist, check your network connection.

Add, edit, or delete connectors

The Dashboard enables you to manage connectors by viewing, adding, editing, or deleting them. You can also view error information for connectors and troubleshoot issues.

Use the dynamic attributes connector dashboard when you need to manage connectors for your network security infrastructure. The dashboard provides comprehensive options for connector management and troubleshooting.

Procedure

Step 1 Access the connector dashboard and select your desired action.

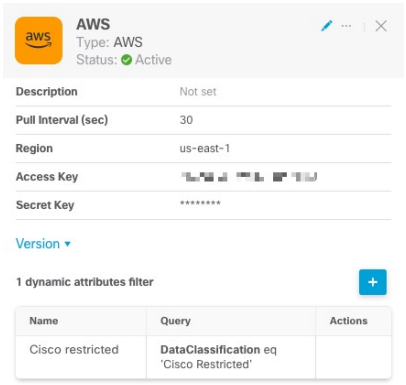
The Dashboard enables you to view or edit connectors. You can click the name of a connector to view all instances of that connector or you can click for the following additional options:

- **Go to Connectors** to view all connectors at the same time; you can add, edit, and delete connectors from there.

- **Add Connector** > ***type*** to add a connector of the indicated type.

Step 2 Click any connector in the connectors column ( ) to display more information about it.

An example follows:

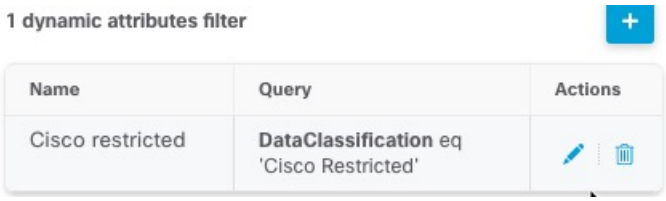


Step 3 Choose from the following management options.

- Click the Edit icon ( ) to edit this connector.
- Click the More icon ( ) for additional options.
- Click to close the panel.
- Click **Version** to display the version of the . You can optionally copy the version to the clipboard if necessary for Cisco TAC.

Step 4 Use the table at the bottom of the panel to add dynamic attributes filters or to edit or delete connectors.

A sample follows:



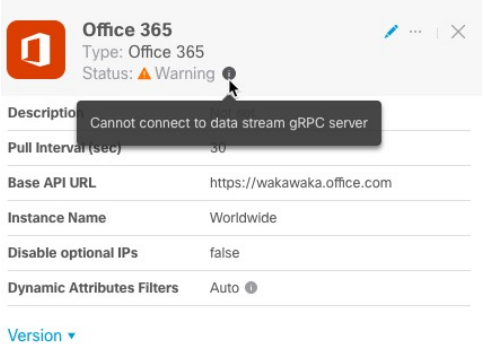
Click the Add icon ( ) to add a dynamic attributes filter for this connector. For more information, see Create dynamic attributes filters, on page 442.

Hover the mouse pointer over the Actions column to either edit or delete the indicated connector.

Step 5 To view error information for a connector, click the name of the connector that is displaying the error.

Step 6 In the right pane, click **Information** ( ).

An example follows.



Step 7 To resolve this issue, edit the connector settings as discussed in Create an office 365 connector, on page 437.

Step 8 If you cannot resolve the issue, click **Version** and copy the version to a text file.

Step 9 Get your Security Cloud Control tenant ID as discussed in Get your tenant ID, on page 466.

What to do next

Provide all of this information to Cisco TAC.

Add, edit, or delete dynamic attributes filters

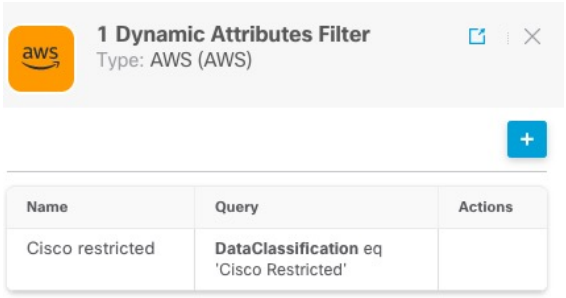
The dashboard enables you to add, edit, or delete dynamic attributes filters. You can click the name of a filter to view all instances of that filter or you can click  for additional options.

You can click the name of a filter to view all instances of that filter or you can click  for the following additional options:

- **Go to Dynamic Attributes Filters** to view all configured dynamic attributes filters. You can add, edit, or delete dynamic attributes filters from there.
- **Add Dynamic Attributes Filters** to add a filter.

For more information about adding dynamic attributes filters, see Create dynamic attributes filters, on page 442.

Click any adapter in the filters column ( ) to display more information about it; an example follows:



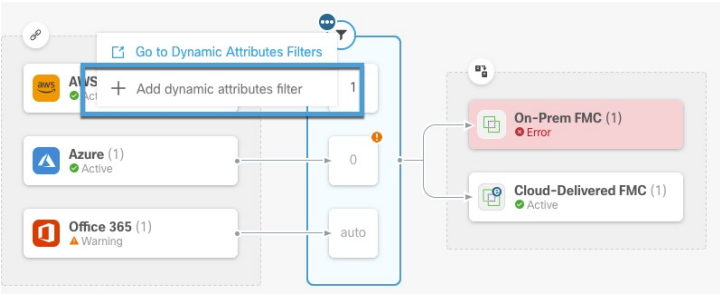
Note Some connectors, such as Outlook 365 and Azure Service tags, automatically pull available dynamic objects without the need for a dynamic attributes filters. Those connectors display **Auto** in the column.

You have these options:

- Click a filter instance to view summary information about dynamic attributes filters associated with a connector.
- Click the Add icon ( ) to add a new dynamic attributes filter.

  For more information, see Create dynamic attributes filters, on page 442.
- Click in the filters column ( ) indicates the indicated connector has no associated dynamic attributes filters. Without associated filters, the connector can send nothing to Firewall Management CenterCloud-Delivered Firewall Management Center.

  One way to resolve the issue is to click in the filters column and click **Add Dynamic Attributes Filter**. A sample follows.



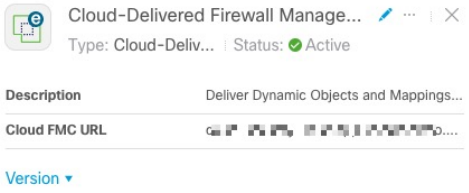
- Click to add, edit, or delete filters.
- Click to close the panel.

Add, edit, or delete adapters

The Dashboard enables you to view or edit adapters. You can click the name of an adapter to view all instances of that adapter or you can click  for the following additional options:

- **Go to Adapters** to view all adapters at the same time; you can add, edit, and delete adapters from there.
- **Add Adapter** > ***type*** to add an adapter of the indicated type.

Click any adapter in the adapters column () to display more information about it; an example follows:



You have the following options:

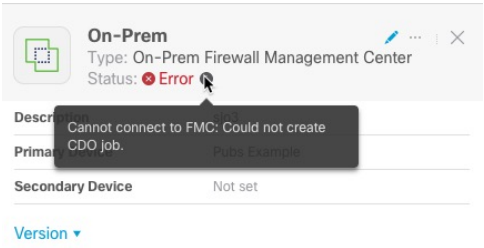
- Click the Edit icon () to edit this connector.
- Click the More icon () for additional options.
- Click **Version** to display the version of the dynamic attributes connector. You can optionally copy the version to the clipboard if necessary for Cisco TAC.
- Click  to add, edit, or delete adapters. You can also view error details on the resulting page.
- Click  to close the panel.

View error information

To view error information for an adapter:

1. On the Dashboard, click the name of the adapter that is displaying the error.
2. In the right pane, click **Information** () .

   An example follows.



3. To resolve this error, make sure the is onboarded correctly. For more information, see Onboard an FMC in *Managing FMC with Security Cloud Control* (link to topic).
4. If you cannot resolve the issue, click **Version** and copy the version to a text file.
5. Get your Security Cloud Control tenant ID as discussed in Get your tenant ID, on page 466
6. Provide all of this information to Cisco TAC.

Related Topics

-

Connectors

A connector is an interface with a cloud service. It retrieves network information from the cloud service to enable the network information to be used in policies on the . It supports both air gap mode and network download mode configurations.

Supported connectors

We support these connectors:

Amazon Web Services connector user permissions and imported data

The dynamic attributes connector imports dynamic attributes from Amazon Web Services (AWS) to for use in policies.

Dynamic attributes imported

The connector imports these dynamic attributes from AWS:

- *Tags*, user-defined key-value pairs you can use to organize your AWS EC2 resources.

  For more information, see Tag your EC2 Resources in the AWS documentation

- *IP addresses* of virtual machines in AWS.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with a policy that permits `ec2:DescribeTags`, `ec2:DescribeVpcs`, and `ec2:DescribeInstances` to be able to import dynamic attributes.

Create an AWS user with minimal permissions for the dynamic attributes connector

This task creates a service account with minimum permissions to send dynamic attributes to .

For a list of the dynamic attributes that can be sent, refer to Amazon Web Services connector user permissions and imported data, on page 417.

Before you begin

You must already have set up your Amazon Web Services (AWS) account. For more information about doing that, see this article in the AWS documentation.

Follow these steps to create an AWS user with minimal permissions for the dynamic attributes connector:

Procedure

Step 1 Log in to the AWS console as a user with the admin role.

Step 2 From the Dashboard, click **Security, Identity & Compliance** > **IAM**.

Step 3 Click **Access Management** > **Users**.

Step 4 Click **Add Users**.

a) In the **User Name** field, enter a name to identify the user.

b) Click **Access Key - Programmatic Access**.

c) At the Set permissions page, click **Next** without granting the user access to anything. You can grant user access later.

d) Add tags to the user if desired.

e) Click **Create User**.

f) Click **Download .csv** to download the user's key to your computer.

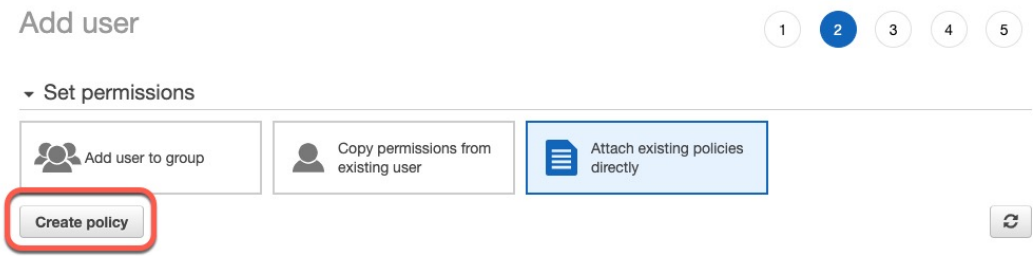
Note
This is the only opportunity you have to retrieve the user's key.

g) Click **Close**.

Step 5 At the Identity and Access Management (IAM) page in the left column, click **Access Management** > **Policies**.

Step 6 Click **Create Policy**.

a) On the Create Policy page, click **JSON**.



b) Enter the following policy in the field:

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Effect": "Allow",
   "Action": [
    "ec2:DescribeTags",
    "ec2:DescribeInstances",
    "ec2:DescribeVpcs"
   ],
   "Resource": "*"
  }
 ]
}
```

c) Click **Next**.

Step 7 Click **Review**.

On the Review Policy page, enter the requested information and click **Create Policy**.

Step 8 Attach your policy

a) On the Policies page, enter all or part of the policy name in the search field and press Enter.
b) Click the policy you just created.
c) Click **Actions** > **Attach**.
d) If necessary, enter all or part of the user name in the search field and press Enter.
e) Click **Attach Policy**.

What to do next

Create an AWS connector, on page 419.

Create an AWS connector

Create a connector to send dynamic objects from AWS to the firewall for use in security policies.

This task discusses how to configure a connector that sends data from AWS to the for use in policies.

Before you begin

Create a user with at least the privileges discussed in Create an AWS user with minimal permissions for the dynamic attributes connector, on page 417.

Follow these steps to create an AWS connector:

Procedure

Step 1 Do any of these actions:

Step 2 Enter the required information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS.
Region	(Required.) Enter your AWS region code.
Access Key	(Required.) Enter your access key.
Secret Key	(Required.) Enter your secret key.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Amazon Web Services security groups connector—About user permissions

The dynamic attributes connector imports dynamic attributes from AWS to for use in policies.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with a policy that permits `ec2:DescribeTags`, `ec2:DescribeVpcs`, and `ec2:DescribeInstances` to be able to import dynamic attributes.

Create an AWS security groups connector

This task creates a connector that sends AWS security groups data to the for use in policies.

This task discusses how to configure a connector that sends AWS security groups data to the for use in policies.

Before you begin

Complete these steps:

- Create AWS security groups as discussed in Work with security groups on the AWS documentation site.
- Create a user with at least the privileges discussed in Create an AWS user with minimal permissions for the dynamic attributes connector, on page 417.

Follow these steps to create an AWS Security Groups connector:

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Region	(Required.) Enter your AWS region code.

Value	Description
AWS Access Key	(Required.) Enter your access key.
AWS Secret Key	(Required.) Enter your secret key.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Create an AWS service tags connector

Create a connector for Amazon Web Services (AWS) service tags to the for use in policies.

For more information, see resources like the following on the AWS documentation site:

- What are tags?
- AWS IP address ranges
- Tagging your AWS resources
- Guidance for Tagging on AWS
- AWS service points

Procedure

Step 1 Do any of the following:

Step 2 Enter the necessary information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
URL	(Required.) Do not change the URL unless advised to do so.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Azure connector—About user permissions and imported data

The dynamic attributes connector imports dynamic attributes from Azure to for use in policies.

Dynamic attributes imported

We import these dynamic attributes from Azure:

- *Tags*, key-value pairs associated with resources, resource groups, and subscriptions.

  For more information, see this page in the Microsoft documentation.

- *IP addresses* of virtual machines in Azure.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with the **Reader** permission to be able to import dynamic attributes.

Create an Azure user with minimal permissions for the dynamic attributes connector

Create an Azure service account with minimal permissions to send dynamic attributes to .

This task discusses how to set up a service account with minimum permissions to send dynamic attributes to . For a list of these attributes, see Azure connector—About user permissions and imported data, on page 422.

Before you begin

You must already have a Microsoft Azure account. To set one up, see this page on the Azure documentation site.

Follow these steps to create an Azure user with minimal permissions for the dynamic attributes connector:

Procedure

Step 1 Log in to the Azure Portal as the owner of the subscription.

Step 2 Click **Azure Active Directory**.

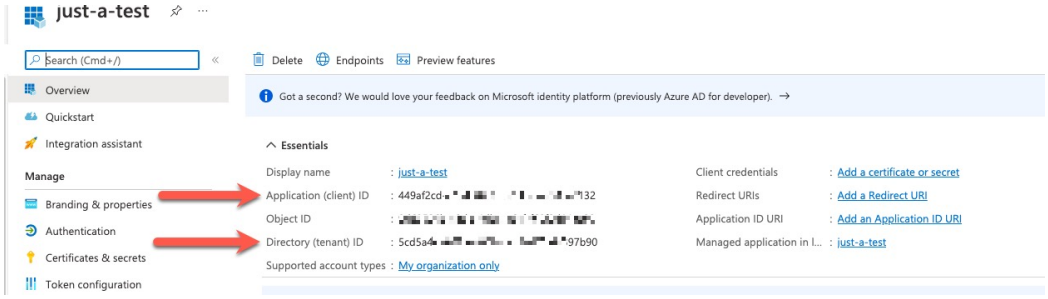
Find the instance of Azure Active Directory for the application you want to set up.

Step 3 Click **Add** > **App registration**.

a) In the **Name** field, enter a name to identify this application.
b) Enter other information on this page as required by your organization.
c) Click **Register**.

Step 4 On the next page, write down or copy the Client ID (also referred to as *application ID*) and the tenant ID (also referred to as the *directory ID*).

Here is a sample:

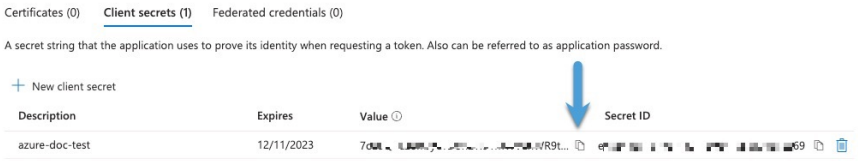


Step 5 Next to Client Credentials, click **Add a certificate or secret**.

Step 6 Click **New Client Secret**.

a) Enter the requested information and click **Add**.

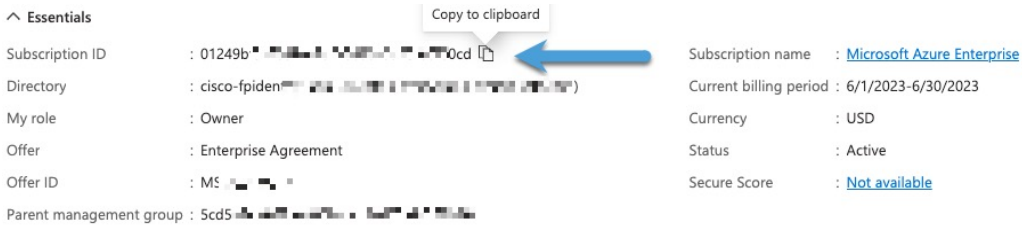
b) Copy the value of the **Value** field to the clipboard. This value, *and not the **Secret ID***, is the client secret.



Step 7 Go back to the main Azure Portal page and click **Subscriptions**.

a) Click the name of your subscription.

b) Copy the subscription ID to the clipboard.



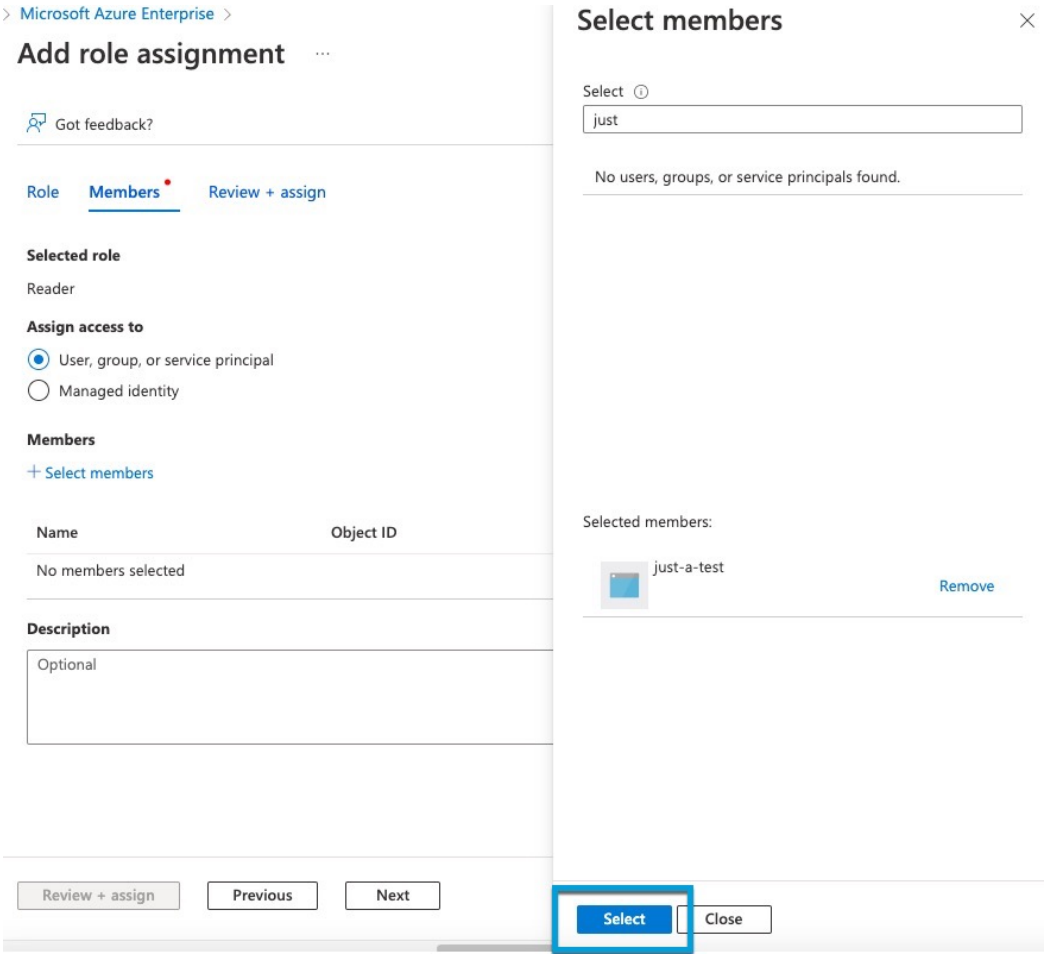
Step 8 Click **Access Control (IAM)**.

a) Click **Add** > **Add role assignment**.

b) Click **Reader** and click **Next**.

c) Click **Select Members**.

d) On the right side of the page, click the name of the app you registered and click **Select**.



e) Click **Review + Assign** and follow the prompts to complete the action.

Also see Create an Azure connector, on page 424.

Create an Azure connector

Create a connector to send data from Azure to for use in policies.

This connector enables integration between Azure and your security management platform to retrieve dynamic object information for policy implementation.

Before you begin

Create an Azure user with at least the privileges discussed in Create an Azure user with minimal permissions for the dynamic attributes connector, on page 422.

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Subscription ID	(Required.) Enter your Azure subscription ID.
Tenant ID	(Required.) Enter your tenant ID.
Client ID	(Required.) Enter your client ID.
Client Secret	(Required.) Enter your client secret.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Create an Azure service tags connector

Create a connector for Azure service tags to enable use in policies with automatically updated IP addresses from Microsoft.

This topic discusses how to create a connector for Azure service tags to the for use in policies. The IP addresses associated with these tags are updated every week by Microsoft.

For more information, see Virtual network service tags on Microsoft TechNet.

Procedure

Step 1 Do any of the following:

Step 2 Enter the required information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.

Value	Description
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Subscription ID	(Required.) Enter your Azure subscription ID.
Tenant ID	(Required.) Enter your tenant ID.
Client ID	(Required.) Enter your client ID.
Client Secret	(Required.) Enter your client secret.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

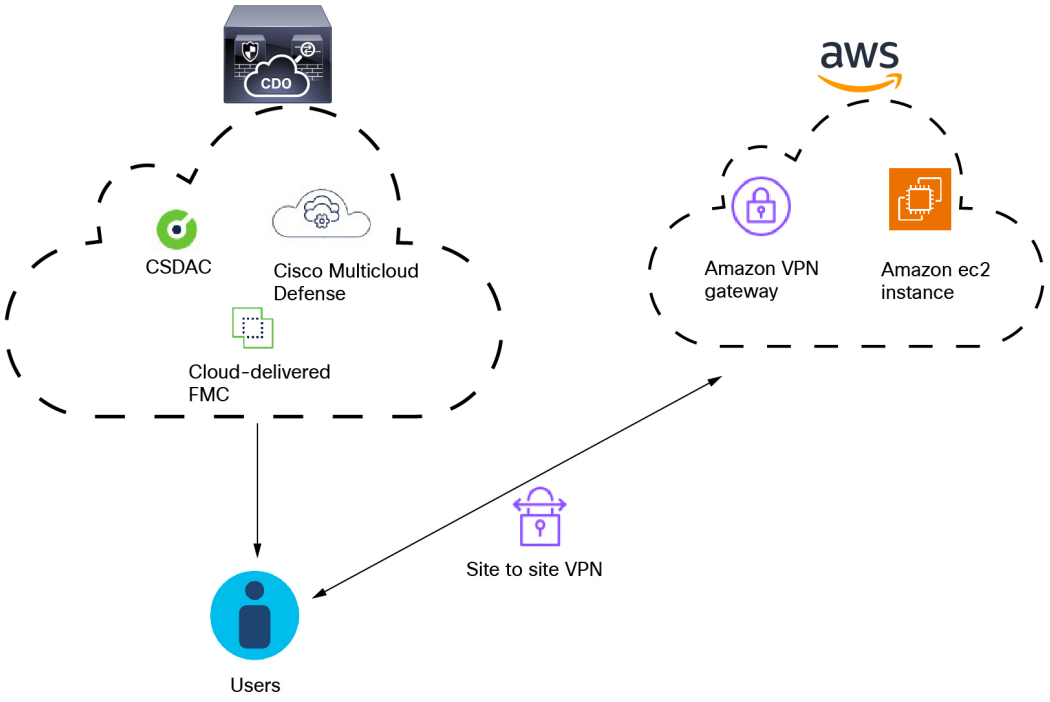
Create an adapter, on page 440

Create a Multicloud Defense connector

This topic discusses how to create a connector for Cisco Multicloud Defense. The connector sends dynamic application address objects to the configured Cloud-Delivered Firewall Management Center.

For more information, see the Address Objects chapter in the *Cisco Multicloud Defense User Guide* and address object API documentation.

The following figure shows how the Cisco Multicloud Defense connector works.



As the figure shows:

- Users logging in and out of AWS create activity monitored by Multicloud Defense.
- The dynamic attributes connector and Multicloud Defense, both included in Security Cloud Control, send IP addresses from that activity to the Cloud-Delivered Firewall Management Center.
- These IP addresses can then be used in access control rules by the Cloud-Delivered Firewall Management Center.

Procedure

Step 1 Do any of the following:

Step 2 Enter a **Name** and optional **Description** to identify the connector.

Step 3 Enter a **Pull Interval**. (Default 30 seconds.) Interval at which objects are retrieved from the Multicloud Defense Connector.

Step 4 Click **Test** and make sure the test succeeds before you save the connector.

Step 5 Click **Save**.

Step 6 Make sure **Ok** is displayed in the Status column.

You must create a Cloud-Delivered Firewall Management Center adapter as discussed in Create an adapter, on page 440.

Create a Cisco cyber vision connector

This task creates a connector to send data from Cisco Cyber Vision to the firewall, enabling dynamic attribute integration between these systems.

This task discusses how to send data from Cisco Cyber Vision to the .

Before you begin

Cisco Cyber Vision must be reachable from the machine on which the dynamic attributes connector is running. You must know its IP address, port, and API key.

To find the API key in the Cyber Vision management console, click **Admin** > **API** > **Token**, then click **Show** to display the token and  to copy the token to the clipboard.

Follow these steps to create a Cisco Cyber Vision connector:

Procedure

Step 1 Do any of the following:

Step 2 Enter the required information.

Value	Description
Name	(Required) Enter a name to uniquely identify this connector.
Description	Optional description.
Cyber Vision Prefix	Enter an alphanumeric string to identify dynamic objects from this Cyber Vision's IP address when objects are sent to . If you have one Cyber Vision IP address, you can enter any value such as **1**.
Pull Interval	(Default 60 seconds) Interval at which data mappings are retrieved from Cyber Vision. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Host	(Required) Enter the Cyber Vision fully qualified host name or IP address.
Port	(Required) Enter the Cyber Vision listen port.
Version 4	(Required) Toggle this button to enable or disable Version 4. When you enable Version 4, the connector fetches hosts and vulnerabilities from the Cyber Vision platform. The Network Map API on the uses this data. When you disable Version 4, the connector fetches groups from the Cyber Vision platform and adds them as dynamic objects.
Token	(Required) Enter the API token.

Value	Description
Score Type	Choices are CVSS and CSRS. **CVSS**: Common vulnerability scoring system (CVSS) is an industry-standard system that retrieves values from the national vulnerability database to describe risk associated with vulnerabilities. CVSS scores power a vulnerability's severity and risk value. **CSRS**: The Cisco Security Risk Score (CSRS) CSRS evaluates vulnerabilities beyond technical severity, focusing on how attackers might exploit them. Scores range from 0 to 100 and are based on factors such as existing vulnerabilities, threat intelligence, and the effectiveness of security controls. This score helps prioritize critical vulnerabilities and allocate resources effectively.
Severity	Click the minimum vulnerability severity level for the dynamic attributes connector to send IP addresses to the Secure Firewall Management Center. (For example, if you click high, IP addresses of hosts with either high or severe vulnerabilities are sent.) Choices: • Critical • High • Medium • Low
Dynamic Object Name	Enter a name to identify the dynamic object created by this connector.
Certificate	You have these options: • Paste the certificate authority (CA) chain as discussed in Manually get a certificate authority (CA) chain, on page 431. • Click **Get Certificate** > **Fetch** to automatically fetch the certificate. Ensure that you have specified a valid host and IP address that exactly matches the server certificate. • Click **Get Certificate** > **Browse from file** to upload a certificate chain you downloaded previously. Ensure that the host or IP address of the certificate you upload exactly matches the Common Name of the CA certificate you enter in host or IP address field.

a) Click **Test** and make sure the test succeeds before you save the connector.
b) Click **Save**.

Status column displays **Ok**.

Create a generic text connector

Use this task to create a connector that retrieves IP addresses from text files and sends them to the firewall for use in access control rules.

This task discusses how to create an ad hoc list of IP addresses you maintain manually and retrieve at an interval you select (30 seconds by default). You can update the list of addresses anytime you want.

For example, you might have a list of IP addresses for an "allow list" in access control rules and another list of IP addresses for a "block list" in access control rules.

Before you begin

Create text files with IP addresses and put it on a web server that is accessible from the . IP addresses can include CIDR notation. The text file must have only one IP address per line.

You can specify up to 10,000 IP addresses per text file.

Follow these steps to create a generic text connector:

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information:

Item	Description
Name	Enter a name to identify the connector.
Description	(Optional.) Enter a description
Pull Interval	Change the frequency, in seconds, at which the dynamic attributes connector retrieves IP addresses from the text file. The default is 30 seconds. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
URLs	Enter a URL from which to retrieve IP addresses.
Add another URL	(Optional.) Click the link to add more URLs to an existing list.
Certificate	(Optional.) If a certificate chain is required for a secure connection to the web server, you have these options: • Click **Get Certificate** > **Fetch** to automatically fetch the certificate or, if that is not possible, get the certificate manually as discussed in Manually get a certificate authority (CA) chain, on page 431. • Click **Get Certificate** > **Browse from file** to upload a certificate chain you downloaded previously.

a) Click **Test** and make sure the test succeeds before you save the connector.
b) Click **Save**.
c) Status column displays **Ok**

What to do next

Create an adapter, on page 440

Manually get a certificate authority (CA) chain

If the certificate authority chain is not fetched automatically, use one of these browser-specific procedures to get a certificate chain to securely connect to vCenter or Firewall Management Center .

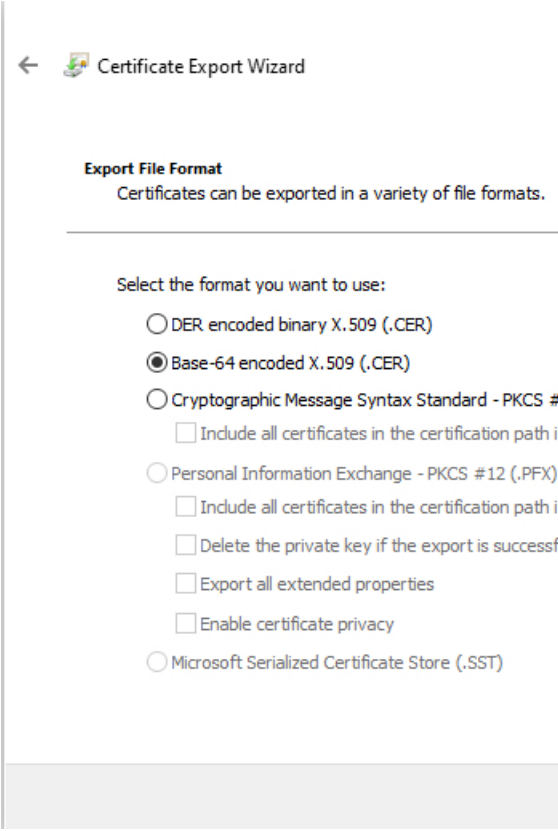
The *certificate chain* is the root certificate and all subordinate certificates.

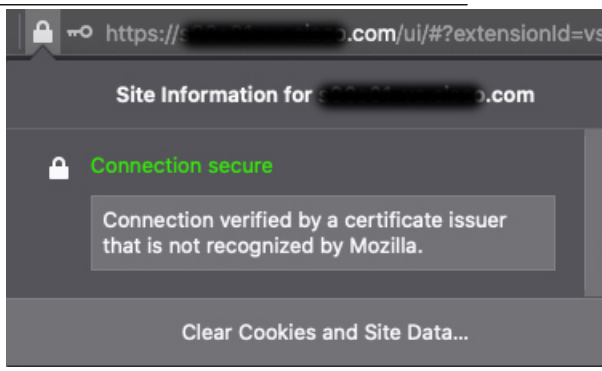
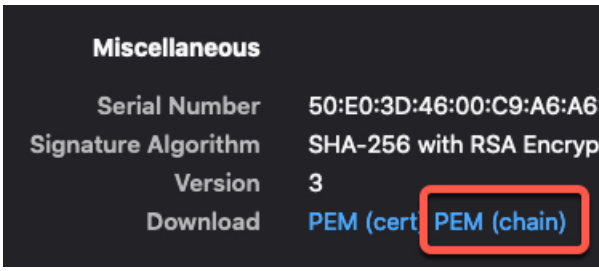
Procedure

	Command or Action	Purpose

Step 1	Get a Certificate Chain—Mac (Chrome and Firefox)	**a.** Open a Terminal window.
		b. Enter this command:
		`security verify-cert -P url[:port]`
		where *url* is the URL (including scheme) to vCenter or Firewall Management Center . For example:
		`security verify-cert -P https://myvcenter.example.com`
		If you access vCenter or Firewall Management Center using NAT or PAT, you can add a port as follows:
		`security verify-cert -P https://myvcenter.example.com:12345`
		c. Save the entire certificate chain to a plaintext file.
		• *Include* all `-----BEGIN CERTIFICATE-----` and `-----END CERTIFICATE-----` delimiters.
		• *Exclude* any extraneous text (for example, the name of the certificate and any text contained in angle brackets (< and >) as well as the angle brackets themselves.

	Command or Action	Purpose
		d. Repeat these tasks for vCenter Firewall Management Center .
Step 2	Get a Certificate Chain—Windows Chrome	**a.** Log in to vCenter or Firewall Management Center using Chrome. **b.** In the browser address bar, click the lock to the left of the host name. **c.** Click **Certificate**. **d.** Click the **Certification Path** tab. **e.** Click the top (that is, first) certificate in the chain. **f.** Click **View Certificate**. **g.** Click the **Details** tab. **h.** Click **Copy to File**. **i.** Follow the prompts to create a CER-formatted certificate file that includes the entire certificate chain. When you're prompted to choose an export file format, click **Base 64-Encoded X.509 (.CER)**.

	Command or Action	Purpose
		 Follow the prompts to complete the export. Open the certificate in a text editor. Repeat the process for all certificates in the chain. You must paste each certificate in the text editor in order, first to last. Repeat these tasks for vCenter or Firewall Management Center .
Step 3	Get a Certificate Chain—Windows Firefox	**a.** Log in to vCenter or Firewall Management Center using Firefox. **b.** Click the lock to the left of the host name. **c.** Click the right arrow (**Show connection details**).

	Command or Action	Purpose
		 **d.** Click **More Information**. **e.** Click **View Certificate**. **f.** If the resulting dialog box has tab pages, click the tab page corresponding to the top-level CA. **g.** Scroll to the Miscellaneous section. **h.** Click **PEM (chain)** in the Download row.  **i.** Save the file. Repeat these tasks for vCenter or Firewall Management Center .

Create a GitHub connector

Create a GitHub connector that sends data to the for use in policies. The IP addresses associated with these tags are maintained by GitHub.

For more information, see About GitHub's IP addresses.

Note Do not change the URL because doing so will fail to retrieve any IP addresses.

Before you begin

You do not have to create a dynamic attributes filters.

Procedure

Step 1 Do any of the following:

Step 2 Enter a **Name** and an optional description.

a) (Optional) In the **Pull Interval** field, change the frequency, in seconds, at which the dynamic attributes connector retrieves IP addresses from GitHub. The default is 21,600 seconds (6 hours).

b) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Google cloud connector user permissions and imported data

A Google Cloud connector imports dynamic attributes from Google Cloud to for use in policies.

Dynamic attributes imported

The connector imports these dynamic attributes from Google Cloud:

- *Labels*: Key-value pairs you can use to organize your Google Cloud resources. For more information, see Creating and Managing Labels in the Google Cloud documentation.
- *Network tags*: Key-value pairs associated with an organization, folder, or project. For more information, see Creating and Managing Tags in the Google Cloud documentation.
- *IP addresses*: Virtual machine addresses in Google Cloud.

The dynamic attributes connector requires a user at minimum with the **Basic** > **Viewer** permission to be able to import dynamic attributes.

Create a Google Cloud user with minimal permissions for the dynamic attributes connector

Create a service account with minimum permissions to send dynamic attributes to .

This task sets up a service account that provides the minimum permissions necessary for the dynamic attributes connector. For a list of these attributes, see Google cloud connector user permissions and imported data, on page 435.

Before you begin

You must already have set up your Google Cloud account. For more information about doing that, see Setting Up Your Environment in the Google Cloud documentation.

Procedure

Step 1 Log in to your Google Cloud account as a user with the owner role.

Step 2 Click **IAM & Admin** > **Service Accounts** > **Create Service Account**.

Step 3 Enter the following information:

- **Service account name**: A name to identify this account; for example, **CSDAC**.
- **Service account ID**: Should be populated with a unique value after you enter the service account name.
- **Service account description**: Enter an optional description.

For more information about service accounts, see Understanding Service Accounts in the Google Cloud documentation.

Click **Create and Continue**.

Step 4 Follow the prompts on your screen until the Grant users access to this service account section is displayed.

Grant the user the **Basic** > **Viewer** role.

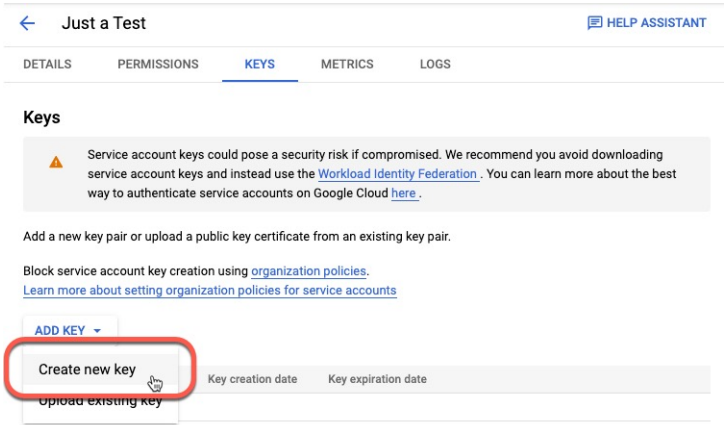
Click **Done**.

A list of service accounts is displayed.

Step 5 Click **More** (⋮) at the end of the row of the service account you created.

Step 6 Click **Manage Keys**.

Step 7 Click **Add Key** > **Create New Key**.



Step 8 Click **JSON**.

Step 9 Click **Create**.

The JSON key is downloaded to your computer.

Keep the key handy when you configure the GCP connector.

See Create a google cloud connector, on page 437.

Create a google cloud connector

Create a Google Cloud connector to enable data transmission from your Google Cloud environment to the firewall for dynamic security attribute monitoring and management.

The Google Cloud connector allows the firewall to receive real-time data from your Google Cloud infrastructure, enabling dynamic security policies based on cloud resource attributes.

Before you begin

Have your Google Cloud JSON-formatted service account data ready; it's required to set up the connector.

Follow these steps to create a Google Cloud connector:

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
GCP region	(Required.) Enter the GCP region in which your Google Cloud is located. For more information, see Regions and Zones in the Google Cloud documentation.
Service account	Paste the JSON code for your Google Cloud service account.

a) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Create an office 365 connector

Create a connector for Office 365 tags to send data to the for use in policies.

The IP addresses associated with these tags are updated every week by Microsoft. You do not have to create a dynamic attributes filter to use the data.

For more information, refer to Office 365 URLs and IP address ranges on docs.microsoft.com.

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Base API URL	(Required.) Enter the URL from which to retrieve Office 365 information, if it's different from the default. For more information, see Office 365 IP Address and URL web service on the Microsoft documentation site.
Instance name	(Required.) From the list, click an instance name. For more information, see Office 365 IP Address and URL web service on the Microsoft documentation site.
Disable optional IPs	(Required.) Enter **true** or **false**.

Step 3 Click **Save**.

The Status column displays **Ok**.

Create a Webex connector

This task creates a Webex connector that sends IP addresses to the management system for use in policies. The IP addresses associated with these tags are maintained by Webex.

This section discusses how to create a Webex connector that sends data to the for use in policies. The IP addresses associated with these tags are maintained by Webex. You do not have to create a dynamic attributes filters.

For more information, see Port Reference for Webex Calling.

Procedure

Step 1 Do any of the following:

Step 2 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Webex. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Provider Reserved IPs	(Required.) (Required.) Slide to enabled to retrieve any reserved IP addresses.

a) Click **Test** and make sure the test succeeds before you save the connector.
b) Click **Save**.
c) The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Create a Zoom connector

Create a Zoom connector that sends data to the for use in policies.

The IP addresses associated with these tags are maintained by Zoom. You do not have to create a dynamic attributes filters.

For more information, see Zoom network firewall or proxy server settings.

Procedure

Step 1 Do any of the following:

Step 2 Enter this information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.

Value	Description
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Zoom. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Provider Reserved IPs	(Required.) Slide to enabled to retrieve any reserved IP addresses.

a) Click **Test** and make sure the test succeeds before you save the connector.
b) Click **Save**.

The Status column displays **Ok**.

What to do next

Create an adapter, on page 440

Create an adapter

An *adapter* is a secure connection to Cloud-Delivered Firewall Management Center or an to which you push network information from cloud objects for use in access control policies.

You can create the following adapters:

Note You must have a **Super Admin** user role to create the first adapter. To view or modify existing adapters, you must have an Admin or Super Admin user role.

How to create an adapter

This topic discusses how to create an adapter to push dynamic objects from the dynamic attributes connector to Cisco Security Cloud.

Before you begin

Onboard the firewall manager to Cisco Security Cloud as discussed in *Onboard a Management Center* in the *Managing Security and Network Devices with Security Cloud Control* online help.

Required User Role: Super Admin

Procedure

Step 1 Log in to Secure Firewall Management Center as a user with the Super Admin role.

Step 2 Click **Administration** > **Dynamic Attributes Connector** > **AdaptersAdministration** > **Dynamic Attributes Connector** > **Adapters**.

Step 3 To add an adapter, click Add icon ( ) > .

Step 4 To edit or delete an adapter, click Edit icon (Edit), or Delete icon (Delete).

Step 5 Add or edit this information.

Value	Description
Name	(Required.) Enter a unique name to identify this adapter.
Description	(Optional) Enter a description of the adapter.
Primary Device	Click the IP address of a management center associated with your tenant.
Secondary Device	(Optional) If you have a secondary , click its name.

Step 6 Click **OK**.

How to create a Cloud-Delivered Firewall Management Center adapter

This topic discusses how to create an adapter to push dynamic objects from the dynamic attributes connector to Cisco Security Cloud.

Before you begin

Required User Role:

- Super Admin

Procedure

Step 1 Log in to Secure Firewall Management CenterCisco Security Cloud as a user with the Super Admin role.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **AdaptersAdministration** > **Dynamic Attributes Connector** > **Adapters**.

Step 4 To add an adapter, click Add icon ( ) > Cloud-Delivered Firewall Management Center.

Step 5 To edit or delete an adapter, click Edit icon (Edit), or Delete icon (Delete).

Step 6 Edit the following information.

Value	Description
Name	(Required.) Enter a unique name to identify this adapter.
Description	Optional description of the adapter.
Cloud FMC URL	From the list, click the URL for your Cloud-Delivered Firewall Management Center.

Step 7 Click **Save**.

Create dynamic attributes filters

Create dynamic attributes filters to expose them as dynamic objects in for use in access control policies.

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the as dynamic objects that can be used in access control policies. For example, restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Before you begin

Complete all of the following tasks:

- Create an adapter, on page 440

Procedure

Step 1 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 2 Enter the following information.

Item	Description
Name	Unique name to identify the dynamic filter (as a dynamic object) in a policy and in the Object Manager (**External Attributes** > **Dynamic Object**).
Connector	From the list, click the name of a connector to use.
Query	Click Add .

Step 3 To add or edit a query, enter the following information.

Item	Description
Key	Click a key from the list. Keys are fetched from the connector.
Operation	Click one of the following: • **Equals** to exactly match the key to the value. • **Contains** to match the key to the value if any part of the value matches.
Values	Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 4 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

Step 5 When you're finished, click **Save**.

Step 6 (Optional.) Verify the dynamic object in the .

a) Log in to the .

b) Click **Policies** > **Firewall Threat Defense**.

c) Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.

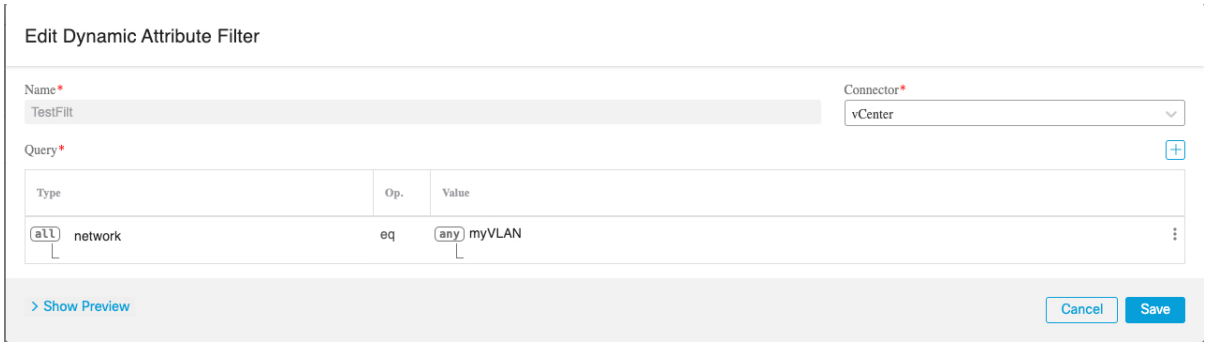
The dynamic attribute query you created should be displayed as a dynamic object.

Dynamic attribute filter examples

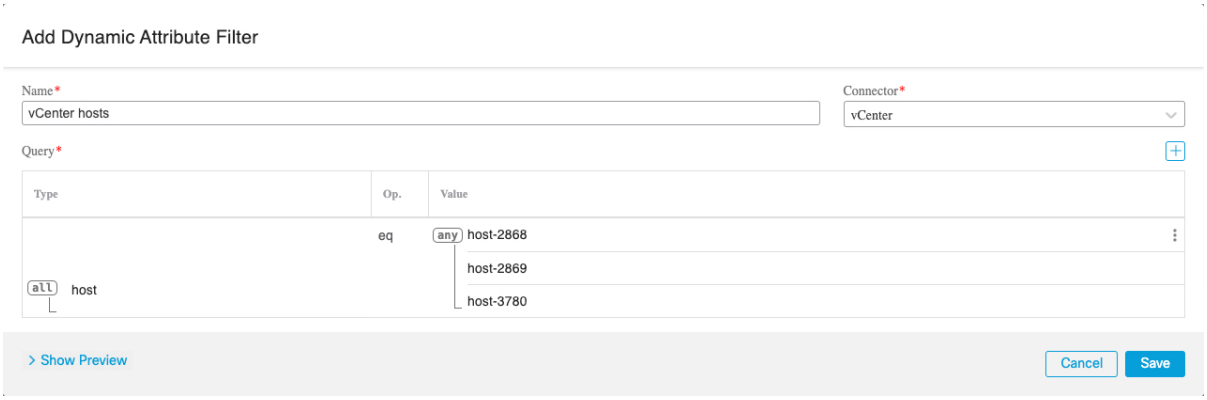
This topic provides some examples of setting up dynamic attribute filters.

Examples: vCenter

This example shows one criterion: a VLAN.

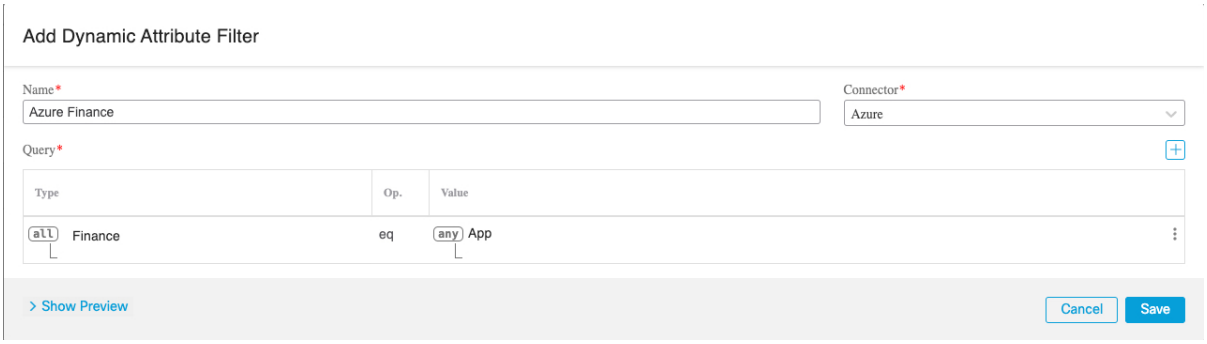


This example shows three criteria that are joined with OR: the query matches any of three hosts.



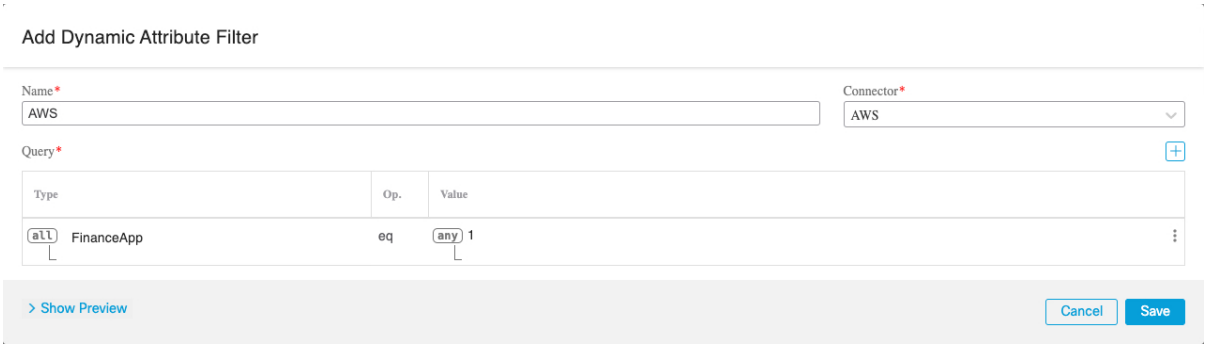
Example: azure

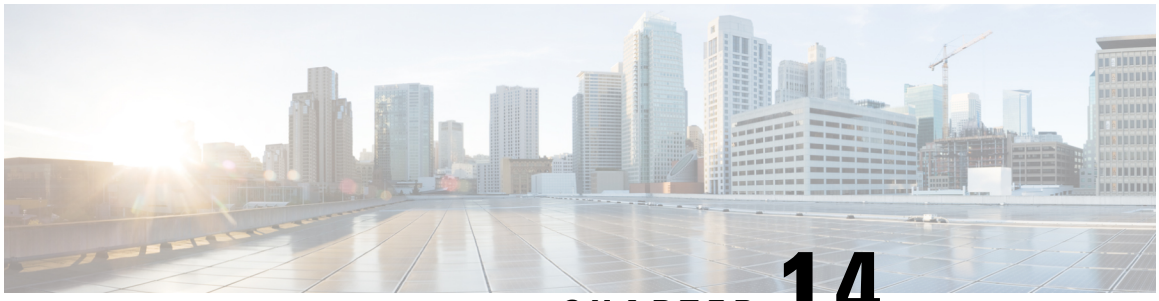
This example shows one criterion: a server tagged as a Finance app.



Example: AWS

This example shows one criterion: a FinanceApp with a value of 1.





CHAPTER 14

Dynamic firewall

A dynamic firewall integrates user identity data with user trust data provided by Identity Intelligence to enhance your ability to detect identity-based exploits in your network.

Identity data integration

The dynamic firewall integrates user identity data from Microsoft AD and ISE with user trust data.

- Dynamic Firewall, on page 445
- How to configure the dynamic firewall, on page 446
- Create dynamic attributes filters, on page 458

Dynamic Firewall

A dynamic firewall integrates identity sources with Identity Intelligence to provide user and device trust information.

Enhanced identity information

Previously, the collected information about users exclusively from the configured identity sources, such as Microsoft Active Directory, the passive identity agent, Cisco Identity Services Engine (Cisco ISE), and so on. This information generally included user name, group, and IP address.

The dynamic firewall enables you to pair user identity with intelligence and use that information in reporting and access control policies.

To use the dynamic firewall, you must:

- Have an Identity Intelligence tenant

  See Duo Identity Security with Cisco Identity Intelligence.

- Enable the Dynamic Attributes Connector
- Set up an identity source:
  - Cisco Identity Services Engine (Cisco ISE)
  - pxGrid Cloud

    pxGrid Cloud combines identity and posture in the same feed

    More information: What is pxGrid?

In addition to providing authentication information, Cisco ISE and pxGrid Cloud can provide the following:

- SGT Exchange Protocol (SXP) over TCP binding and directory session information if desired. For more information, see the *Cisco Identity Services Engine Administrator Guide*
- Posture and mobile device management compliance. For more information, see Compliance.

- Set up an identity realm:
  -

The *identity source* provides authentication information (login, logout) as well as posture. The identity source can also provide SXP binding and session directory information if desired.

The *identity realm* provides user, group, and IP address information.

How to configure the dynamic firewall

This topic helps you understand the concepts and options to configure the dynamic firewall discussed in Dynamic Firewall, on page 445.

Summary

The dynamic firewall integrates an identity source (such as Cisco ISE) with Cisco Identity Intelligence, which provides user trust information to the Secure Firewall Management Center.

1. Configure Cisco Identity Intelligence to collect user trust information.
2. Configure a supported Secure Firewall Management Center identity source.
3. Configure a supported identity realm.
4. Enable the dynamic attributes connector.
5. Configure the dynamic firewall.

Workflow

The following procedure provides a high-level overview of how to configure the dynamic firewall.

1. As a Duo user with the Owner role, provision a Cisco Identity Intelligence tenant.

   You can provision a tenant from Duo Advantage as discussed in *Provision Your Cisco Identity Intelligence Tenant*.

2. In Cisco Identity Intelligence, create an API integration and use the information to set up the dynamic firewall.

   We use Cisco Identity Intelligence to find user and device risk information in your network.

   For more information about Cisco Identity Intelligence, see How-to Guides.

   For more information about this task, see Get required information for Identity Intelligence, on page 448.

3. (Microsoft Azure AD realm only.) In Identity Intelligence, create a Microsoft Entra ID integration.

For more information, see Microsoft Entra ID (Azure AD) Data Integration.

4. Create an identity source. (If you already have an identity source, continue with the next step.)

   You can do this in any of the following ways:

   - The Configure Dynamic Firewall dialog box displays **Configure** links to start setting up your identity source.
   - Click **System** (⚙) > **Integration** > **Identity Sources**.

   For more information about creating identity sources, see:

5. Create an identity realm.

   We support the following realms:

   - Only Microsoft AD is supported; LDAP realms are not supported.
   -

6. Enable the dynamic attributes connector.

   The dynamic attributes connector is required to use the dynamic firewall. It enables your identity source to integrate with Identity Intelligence to provide enhanced insights into user activity.

   See .

7. Create the dynamic firewall instance. (If you already have a dynamic firewall instance, continue with the next step.)

   Click **Integration** > **Dynamic Attributes Connector** and click **Configure Dynamic Firewall**.

   See Create a dynamic firewall instance, on page 450.

8. Associate your identity source with Cisco Identity Intelligence.

   See Associate an identity source with Identity Intelligence, on page 451.

9. View system-defined filters.

   We create dynamic attributes filters for the following:

   - Untrusted device
   - Trusted device
   - Untrusted user
   - Questionable user

   You can edit or replace these dynamic attributes filters as discussed in Create dynamic attributes filters, on page 458.

10. View system-defined access control rules.

    We create an access control policy named Dynamic Firewall Policy (or similar) with the following rules:

    - Block an untrusted user from any source network to any destination network.
    - Monitor a questionable user from any source network to any destination network.

- Block an untrusted device from any source network to any destination network.

You can edit or delete the access control policy and rules as discussed in View and edit the system-created access control policy, on page 457.

Enable the dynamic attributes connector

Enable the dynamic attributes connector to allow objects from cloud networking products to be used in Secure Firewall Management Center access control rules.

This task discusses how to enable the dynamic attributes connector in the Secure Firewall Management Center. The dynamic attributes connector is an integration that enables objects from cloud networking products to be used in Secure Firewall Management Center access control rules.

Procedure

Step 1 Log in to the Secure Firewall Management Center if you have not done so already.

Step 2 Click **Integration** > **Dynamic Attributes Connector**.

Step 3 Slide to **Enabled**.

Step 4 The system displays messages when the dynamic attributes connector is enabled.

In the event of errors, try again. If errors persist, contact Cisco TAC.

See Connectors, on page 417.

Get required information for Identity Intelligence

Get the necessary credentials and configuration values from Identity Intelligence to enable integration with the dynamic firewall.

This task discusses how to create an API client, which provides all the get required information to set up Identity Intelligence in the dynamic firewall.

If you already have an API client and you know the values of all these parameters, you can skip this procedure and continue with :

- **Client ID**
- **API URL**
- **Token URL**
- **Client Secret**

Before you begin

Integrating with the dynamic firewall requires you to create an *API client integration* in Identity Intelligence.

Among the values you must know about your API client integration is the client secret, which is displayed when you create the API client only. For that reason you might need to create the API integration first.

For more information about creating an API cilent integration, see Public API.

Follow these steps to get required information for Identity Intelligence:

Procedure

Step 1 Log in to your Identity Intelligence tenant.

Step 2 Click (**Integrations**).

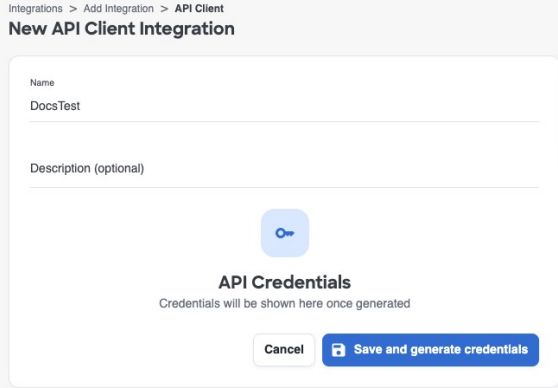
Step 3 Click **Add Integration**.

Step 4 On the next page, under API Clients, click **Add API Client**.

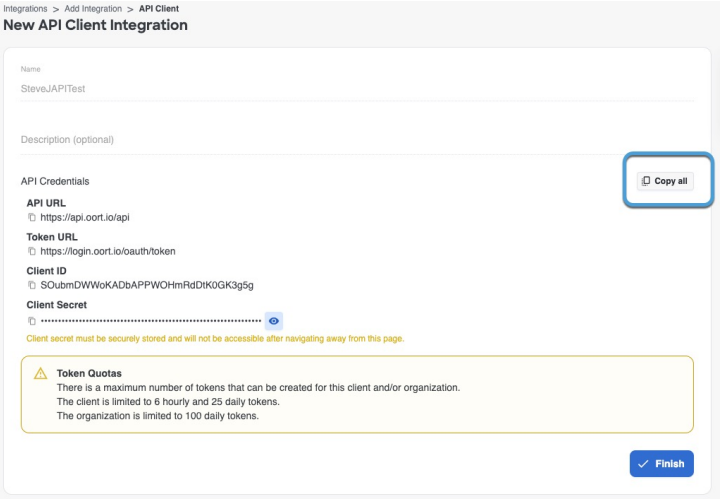
Step 5 Enter a **Name** and an optional **Description**.

Step 6 Click **Save and Generate Credentials**.

This figure shows an example.



Step 7 On the next page, click **Copy all** as this figure shows.



Step 8 Save the credentials for later use.

Step 9 Click **Finish**.

Create an identity source and realm for the dynamic firewall

Before you configure the dynamic firewall, you must configure a supported identity realm and identity source.

Configure an identity realm

These identity realms are supported:

- Only Microsoft AD is supported; LDAP realms are not supported.
-

Configure an identity source

These identity sources are supported:

Create a dynamic firewall instance

Create a new instance of the dynamic firewall to establish an association between an identity source and Identity Intelligence.

This task discusses how to create a new instance of the dynamic firewall, which is an association between an identity source and Identity Intelligence.

Before you begin

Complete all these steps:

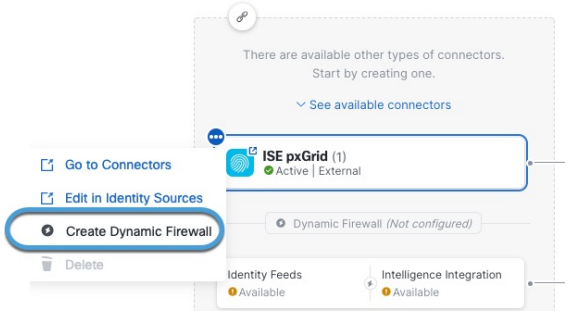
- Enable the dynamic attributes connector as discussed in .
- Create an identity source:

Follow these steps to create a dynamic firewall instance:

Procedure

Step 1 Click  next to the name of the identity source with which to add the dynamic firewall.

The following figure shows an example.



Note
If you do not see an identity source, create one before continuing:

Step 2 Click **Create Dynamic Firewall**.

Step 3 Continue with .

Associate an identity source with Identity Intelligence

Associate a supported identity source with Identity Intelligence to enable user and device trust ratings for dynamic firewall configuration.

This task discusses how you associate an identity source with Identity Intelligence, which provides user and device trust ratings to the .

For more information, see User Trust Level.

Before you begin

Before you begin, make sure you:

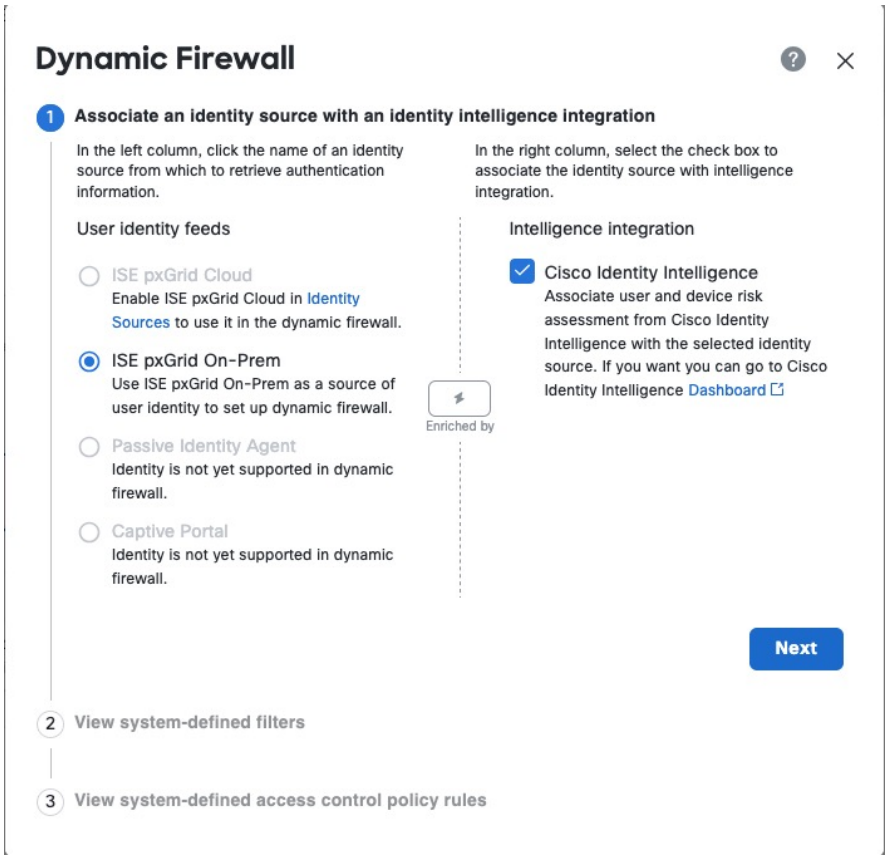
- Understand how the identity realm, identity source, and Identity Intelligence work together as discussed in Dynamic Firewall, on page 445.
- Completed the tasks discussed in Create a dynamic firewall instance, on page 450.

Procedure

Step 1 Start with .

Step 2 On the next page, from the left column, click your identity source. Then, in the right column, select the **Cisco Identity Intelligence** check box to add user intelligence, including user and device risk.

The following figure shows an example.



Step 3 Click **Next**.

Step 4 Continue with Configure Identity Intelligence, on page 452.

Configure Identity Intelligence

This task enables integration between the dynamic firewall and Identity Intelligence.

This task discusses how you associate an identity source with Identity Intelligence, which provides user and device risk ratings to the .

Before you begin

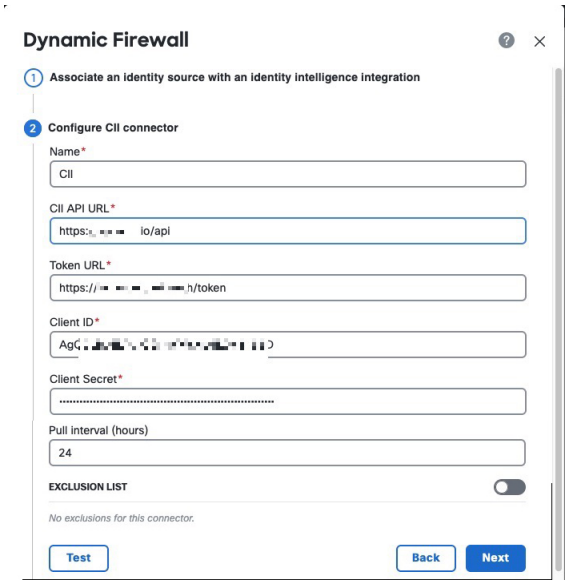
Complete the tasks discussed in Associate an identity source with Identity Intelligence, on page 451.

Procedure

Step 1 Complete the tasks discussed in Associate an identity source with Identity Intelligence, on page 451.

Step 2 If you selected the **Cisco Identity Intelligence** check box, enter the information you found for Identity Intelligence as described in Get required information for Identity Intelligence, on page 448.

The following figure shows an example.



Step 3 (Optional.) For Identity Intelligence to consider a specific set of users as trusted, slide **Exclusion List** to **Slider enabled** ( ).

Enter one user name per line in **username@domain.com** format. Users in this list are considered trusted by Identity Intelligence.

Step 4 Click **Test**.

Only if the test succeeds, continue with the next step.

If any errors are displayed, check all of your Identity Intelligence values and try again.

Step 5 Click **Next**.

Step 6 Continue with View system-defined filters, on page 453.

View system-defined filters

This task allows you to examine and understand the system-defined dynamic attributes filters that are automatically created during the configuration process.

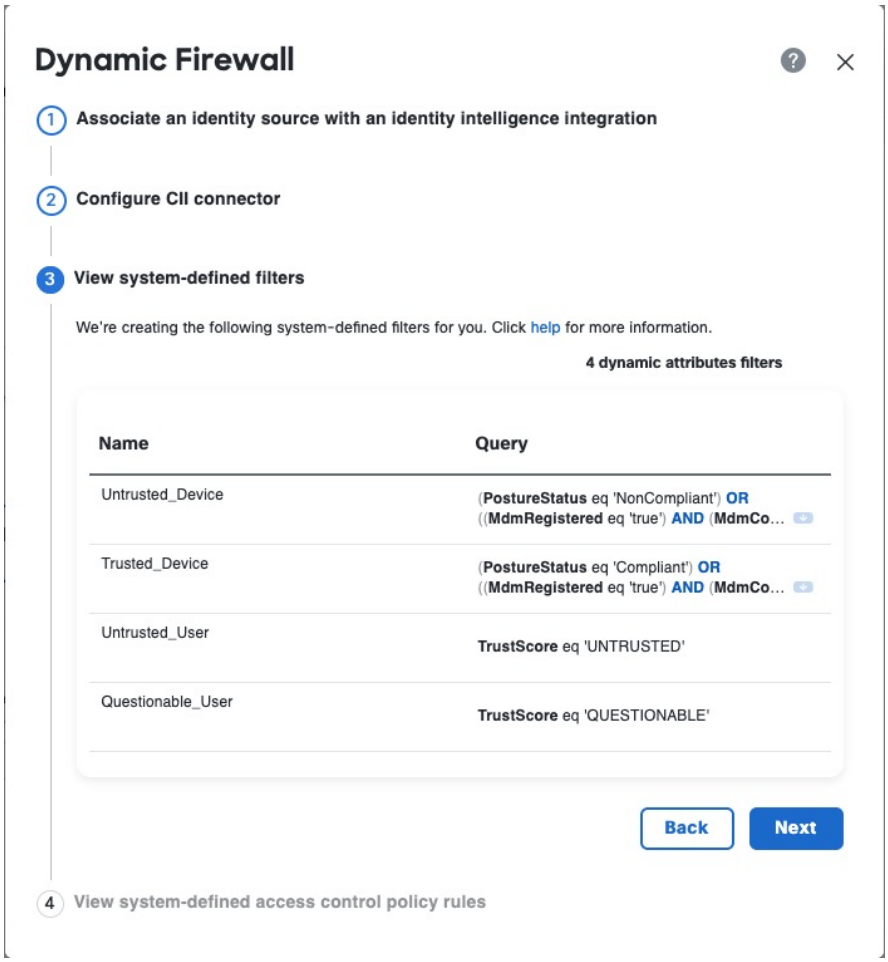
This task discusses how you associate an identity source with Cisco Identity Intelligence, which provides user and device risk ratings to the .

Before you begin

See .

Procedure

Step 1 The system displays a set of system-defined dynamic attributes filters, as shown in the following figure.



Step 2 View the system-created filters. Click on any row to expand the filter so you can view the filter and see its details.

Step 3 Click **Next**.

Step 4 Continue with View system-defined access control rules, on page 454.

View system-defined access control rules

This task allows you to review and decide whether to create system-defined access control rules for your dynamic firewall instance.

This task discusses access control rules created by the dynamic firewall.

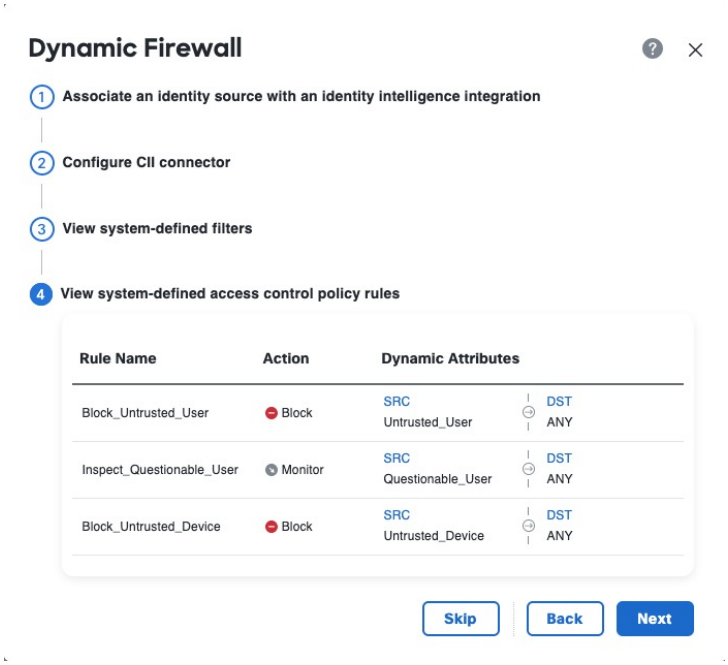
Before you begin

See View system-defined filters, on page 453.

Procedure

Step 1 View the system-created access control rules.

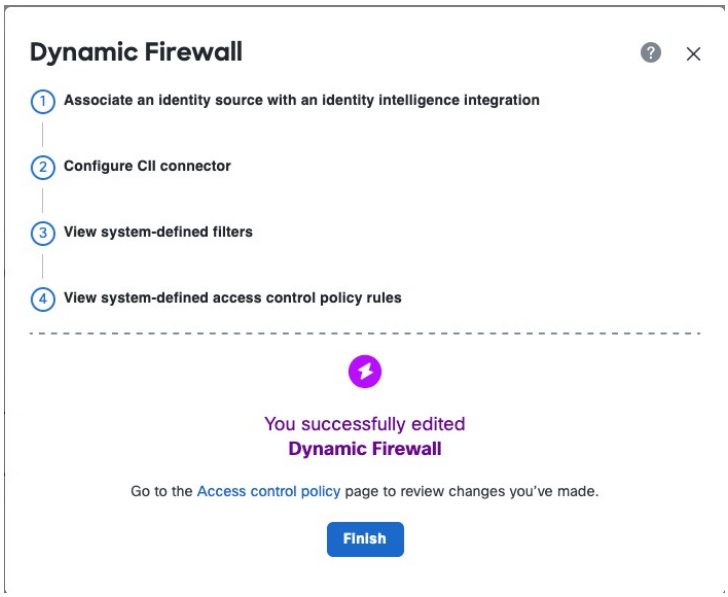
The following figure shows an example.



Step 2 Choose one of these options:

- Click **Skip** to skip creating these access control rules. You can create your own anytime.
- Click **Next** to create an access control policy named Dynamic Firewall Policy with the rules shown in the preceding figure.
- Click **Back** to return to system-created filters.

Step 3 After you click **Next**, if you created access control rules successfully, the following page is displayed:



Edit the user exclusion list

Specify users provided by Identity Intelligence as always being trusted.

You can instruct Identity Intelligence to treat specific users as trusted.

Before you begin

Configure the dynamic firewall as discussed in Create a dynamic firewall instance, on page 450.

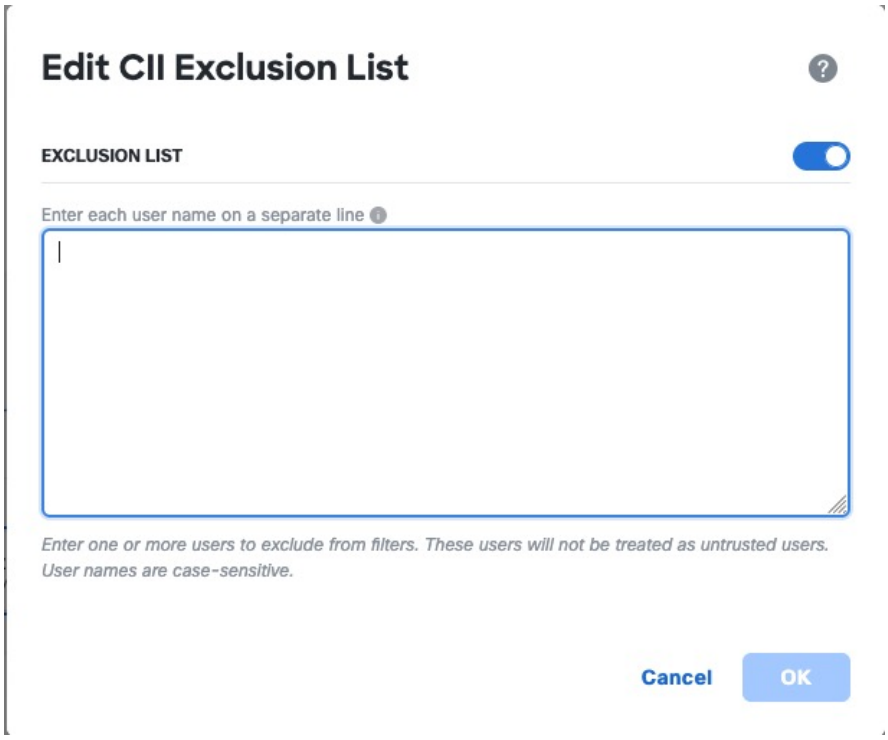
Procedure

Step 1 Click **Integration** > **Dynamic Attributes Connector**.

Step 2 Click next to the name of the identity source.

Step 3 Click **Edit CII Exclusion List**.

The following dialog box is displayed.



Step 4 In the provided field, enter one user name in `username@domain.com` format on a line, press Enter, and enter another user name.

Each user name is considered as trusted by Identity Intelligence.

View and edit the system-created access control policy

Customize the system-created access control policy by adding devices, changing rules, reordering rules, or deleting rules to meet your specific network security requirements.

This topic discusses how you can edit the system-created access control rules and policy. Initially, the policy isn't associated with any devices but if you want to use it you can add devices, change rules, reorder rules, or delete rules.

Before you begin

Complete the tasks described in View system-defined access control rules, on page 454.

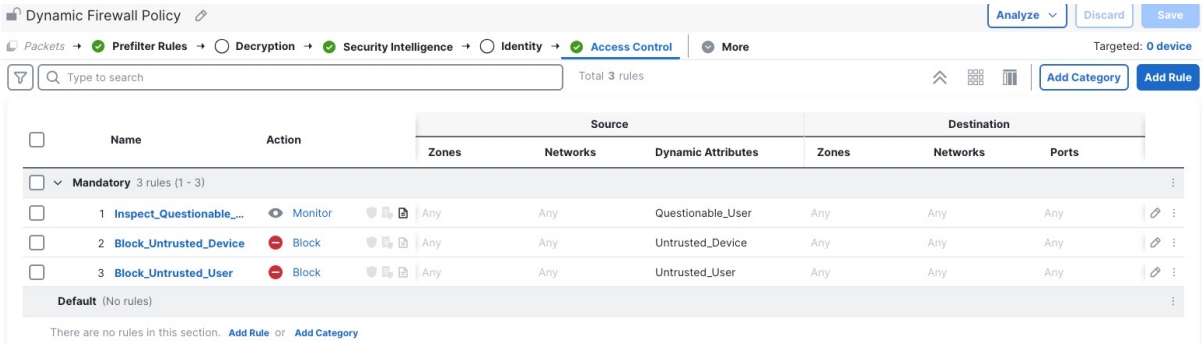
Follow these steps to view and edit the system-created access control policy:

Procedure

Step 1 Click **Policies** > **Access Control heading** > **Access Control**.

Step 2 Click **Edit** (✎) next to the policy named Dynamic Firewall Policy (or similar).

The following figure shows a sample access control policy.



Note that in this access control policy, only the rule set to monitor questionable users logs anything. To adjust the logging settings, see .

Step 3 Do any of the following:

- Target the access control policy at devices: .
- Edit the policy, including adding logging: .
- Edit access control rules: .
- Set advanced policy options: .
- Associate other policies with this access control policy: .

Create dynamic attributes filters

Create dynamic attributes filters that can be used as dynamic objects in access control policies to restrict access based on specific criteria such as group membership.

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the as dynamic objects that can be used in access control policies. For example, you could restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Procedure

Step 1 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 2 Enter the following information.

- **Name**: Unique name to identify the dynamic filter (as a dynamic object) in access control policy and in the Object Manager (**External Attributes** > **Dynamic Object**).
- **Connector**: From the list, click the name of a connector to use.

Step 3 To add a query, enter the following information.

- **Key**: Click a key from the list. Keys are fetched from the connector.
- **Operation**: Click one of the following:
  - **Equals** to exactly match the key to the value.
  - **Contains** to match the key to the value if any part of the value matches.
- **Values**: Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 4 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

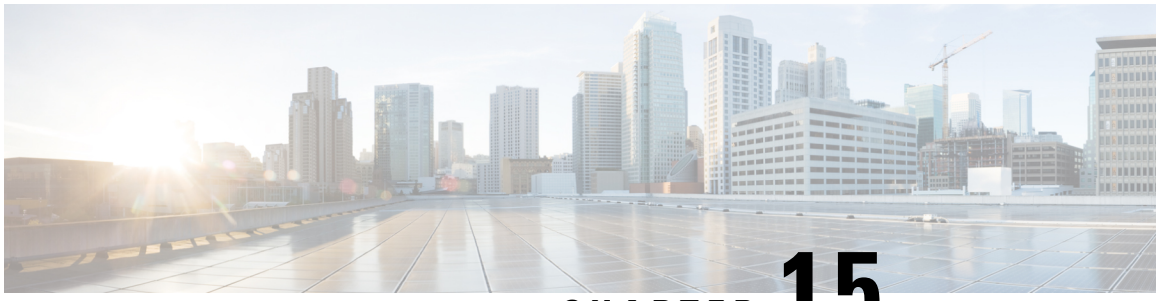
When you're finished, click **Save**.

What to do next

Verify the dynamic object in the .

1. Log in to the .
2. Click **Policies** > **Firewall Threat Defense**.
3. Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.

The dynamic attribute query you created should be displayed as a dynamic object.



CHAPTER 15

Use Dynamic Objects in Access Control Policies

The dynamic attributes connector enables you to configure dynamic attributes filters, seen in the as dynamic objects, in access control rules.

- Dynamic objects in access control rules, on page 461
- Create dynamic attributes filters, on page 461
- Dynamic attributes rule conditions, on page 463
- Create access control rules using dynamic attributes filters, on page 463

Dynamic objects in access control rules

You can use dynamic objects on the access control rule's **Dynamic Attributes** tab page. You can add dynamic objects as source or destination attributes.

Dynamic object usage examples

In an access control block rule, you can add a Finance dynamic object as a destination attribute to block access to Finance servers by whatever objects match the other criteria in the rule.

Dynamic attributes filter limitations

Create dynamic attributes filters

Create dynamic attributes filters to expose them as dynamic objects in for use in access control policies.

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the as dynamic objects that can be used in access control policies. For example, restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Before you begin

Complete all of the following tasks:

- Create an adapter, on page 440

Procedure

Step 1 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 2 Enter the following information.

Item	Description
Name	Unique name to identify the dynamic filter (as a dynamic object) in a policy and in the Object Manager (**External Attributes** > **Dynamic Object**).
Connector	From the list, click the name of a connector to use.
Query	Click Add .

Step 3 To add or edit a query, enter the following information.

Item	Description
Key	Click a key from the list. Keys are fetched from the connector.
Operation	Click one of the following: • **Equals** to exactly match the key to the value. • **Contains** to match the key to the value if any part of the value matches.
Values	Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 4 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

Step 5 When you're finished, click **Save**.

Step 6 (Optional.) Verify the dynamic object in the .

a) Log in to the .
b) Click **Policies** > **Firewall Threat Defense**.
c) Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.

The dynamic attribute query you created should be displayed as a dynamic object.

Dynamic attributes rule conditions

Dynamic attributes rule conditions allow you to specify access control rules based on real-time properties such as network objects, device types, locations, and security tags. These conditions determine how access control rules match traffic based on various attributes, optimizing policy flexibility and accuracy.

Types of dynamic attributes

Dynamic attributes include:

- (source only) SGT objects contain tags either manually defined or defined in ISE. For more information, see Source and Destination Security Group Tag (SGT) Matching and Security Group Tag.
- (source only) Location IP objects, defined by Cisco ISE
- (source only) Device type objects, defined by Cisco ISE (also referred to as endpoint profile objects)

Combining objects in rules

Dynamic attributes can be used as source criteria and destination criteria in access control rules. Use these guidelines:

- Objects of different types are ANDd together
- Objects of a similar type are ORd together

For example, if you choose source destination criteria SGT 1, SGT 2, and device type 1, the rule matches if device type 1 is detected on either SGT 1 or SGT 2.

If you select both a security group tag, and a dynamic object that lists IP addresses, the rule matches if traffic with the tag originating from, or destined to, one of those IP addresses.

Create access control rules using dynamic attributes filters

Create access control rules using dynamic objects that are based on dynamic attributes filters you have previously configured.

This topic discusses how to create access control rules using dynamic objects.

Before you begin

Create dynamic attributes filters as discussed in .

Follow these steps to create access control rules using dynamic attributes filters:

Procedure

Step 1 Log in to the Secure Firewall Management Center

Click **Policies** > **Access Control heading** > **Access Control**.

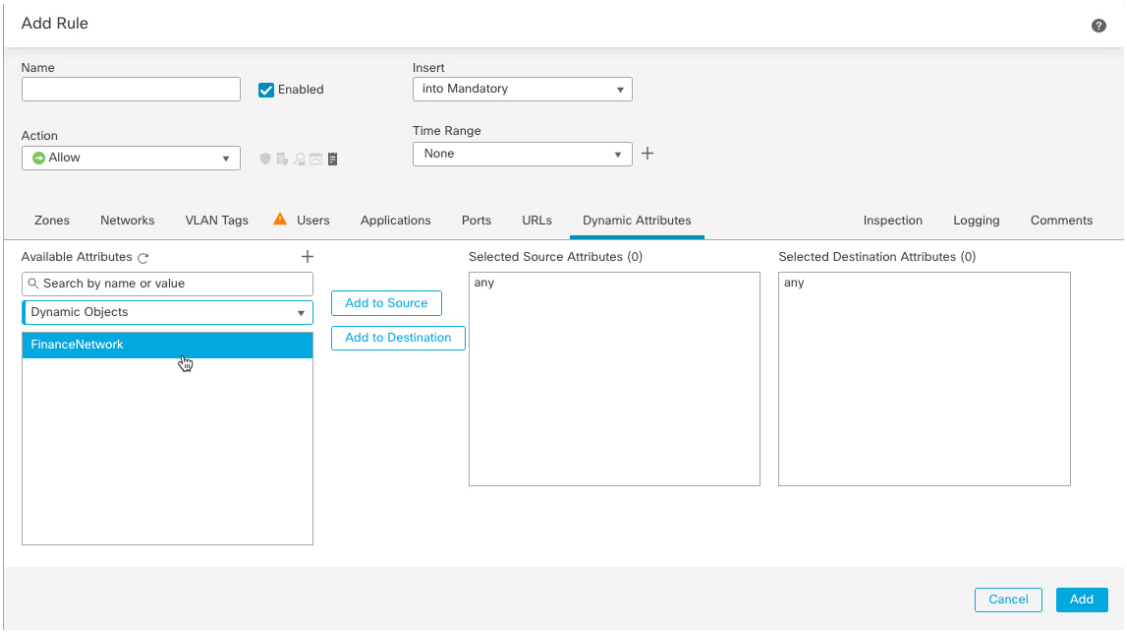
Step 2 Click **Edit** (✎) next to an access control policy.

Step 3 Click **Add Rule**.

Step 4 Click the **Dynamic Attributes** tab.

Step 5 In the Available Attributes section, from the list, click **Dynamic Objects**.

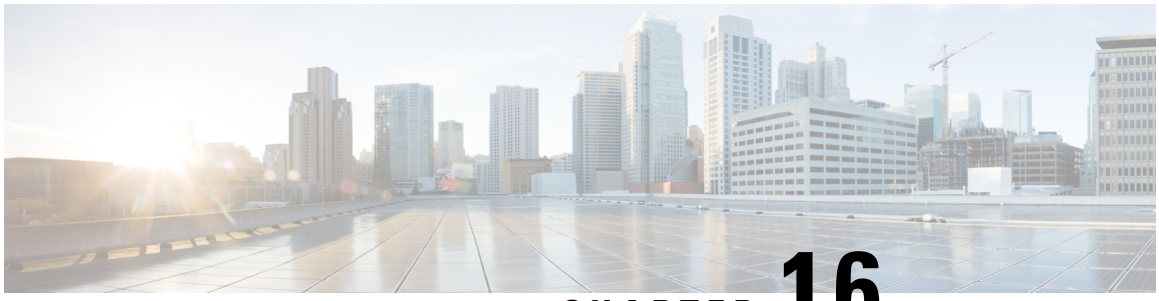
The following figure shows an example.



This example shows a dynamic object named `APIC Dynamic Attribute` that corresponds to the dynamic attribute filter created in the dynamic attributes connector.

Step 6 Add the desired object to source or destination attributes.

Step 7 Add other conditions to the rule if desired.



CHAPTER 16

Troubleshoot the Dynamic Attributes Connector

How to troubleshoot issues with the dynamic attributes connector.

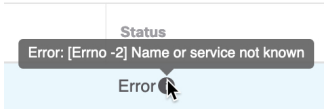
- Troubleshoot error messages, on page 465
- Get your tenant ID, on page 466
- Manually get a certificate authority (CA) chain, on page 466

Troubleshoot error messages

This reference provides error messages and troubleshooting solutions for dynamic attributes connectors and adapters in the dynamic attributes connector.

Problem: name or service not known error

This error is displayed as a tooltip when you hover the mouse over an error condition on an adapter or connector. An example follows; yours might look different.

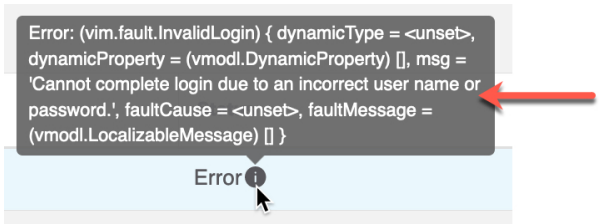


Solution: Edit the connector or adapter and check for:

- A trailing slash on a host name
- Verify the password is correct

Problem: incorrect username or password

This error is displayed as a tooltip when you hover the mouse over an error condition on a connector.



Solution: Edit the connector and change the user name or password.

Get your tenant ID

This task provides your tenant ID to Cisco TAC for troubleshooting assistance with the dynamic attributes connector.

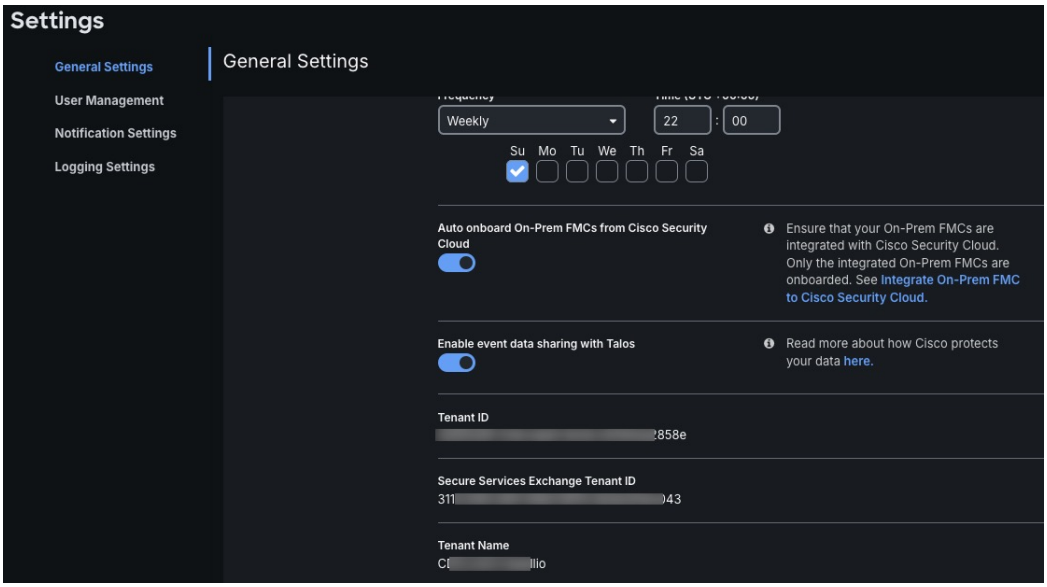
If you require assistance with the dynamic attributes connector, you must provide your tenant ID to Cisco TAC so we can look at your logs.

Procedure

Step 1 Click **Administration** > **General Settings**.

Step 2 Copy your tenant ID to the clipboard to provide to Cisco TAC.

A sample follows.



Manually get a certificate authority (CA) chain

If the certificate authority chain is not fetched automatically, use one of these browser-specific procedures to get a certificate chain to securely connect to vCenter or Firewall Management Center .

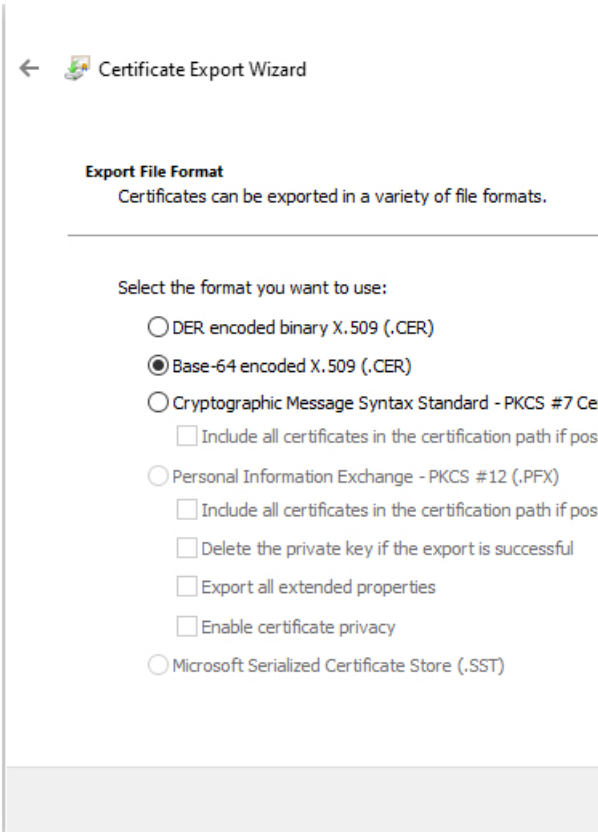
The *certificate chain* is the root certificate and all subordinate certificates.

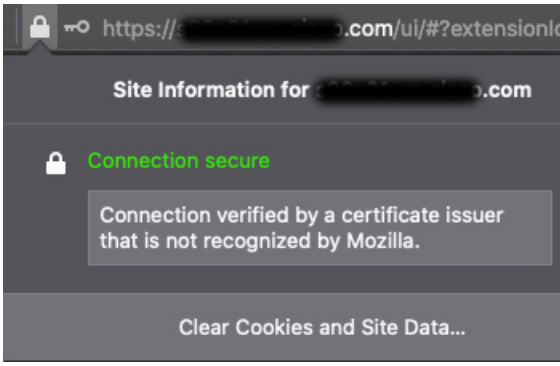
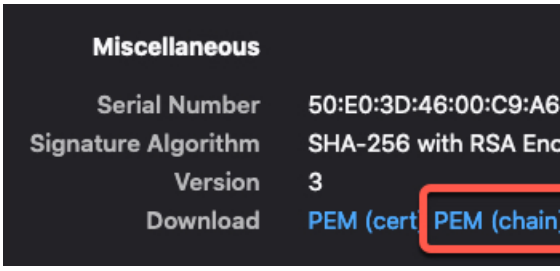
Procedure

	Command or Action	Purpose

Step 1	Get a Certificate Chain—Mac (Chrome and Firefox)	**a.** Open a Terminal window.
		b. Enter this command:
		`security verify-cert -P url[:port]`
		where *url* is the URL (including scheme) to vCenter or Firewall Management Center . For example:
		`security verify-cert -P https://myvcenter.example.com`
		If you access vCenter or Firewall Management Center using NAT or PAT, you can add a port as follows:
		`security verify-cert -P https://myvcenter.example.com:12345`
		c. Save the entire certificate chain to a plaintext file.
		• *Include* all `-----BEGIN CERTIFICATE-----` and `-----END CERTIFICATE-----` delimiters.
		• *Exclude* any extraneous text (for example, the name of the certificate and any text contained in angle brackets (< and >) as well as the angle brackets themselves.
		d. Repeat these tasks for vCenter Firewall Management Center .

Step 2	Get a Certificate Chain—Windows Chrome	**a.** Log in to vCenter or Firewall Management Center using Chrome. **b.** In the browser address bar, click the lock to the left of the host name. **c.** Click **Certificate**. **d.** Click the **Certification Path** tab. **e.** Click the top (that is, first) certificate in the chain. **f.** Click **View Certificate**. **g.** Click the **Details** tab.

	Command or Action	Purpose
		h. Click **Copy to File**. **i.** Follow the prompts to create a CER-formatted certificate file that includes the entire certificate chain. When you're prompted to choose an export file format, click **Base 64-Encoded X.509 (.CER)**.  Follow the prompts to complete the export. Open the certificate in a text editor. Repeat the process for all certificates in the chain. You must paste each certificate in the text editor in order, first to last. Repeat these tasks for vCenter or Firewall Management Center .
Step 3	Get a Certificate Chain—Windows Firefox	**a.** Log in to vCenter or Firewall Management Center using Firefox.

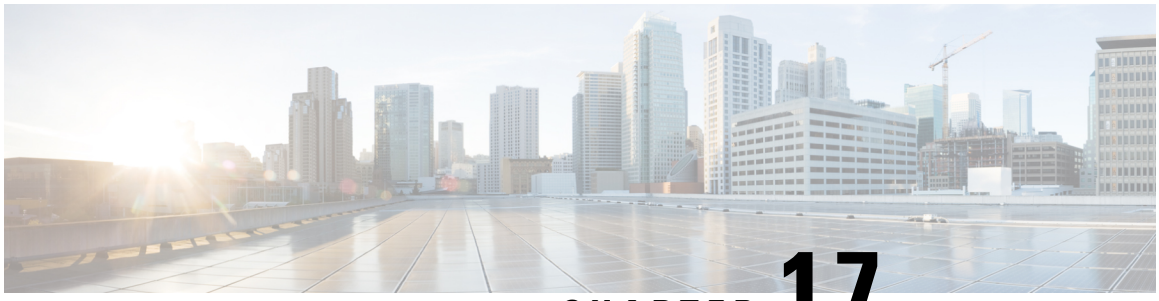
	Command or Action	Purpose
		b. Click the lock to the left of the host name. **c.** Click the right arrow (**Show connection details**).  **d.** Click **More Information**. **e.** Click **View Certificate**. **f.** If the resulting dialog box has tab pages, click the tab page corresponding to the top-level CA. **g.** Scroll to the Miscellaneous section. **h.** Click **PEM (chain)** in the Download row.  **i.** Save the file. Repeat these tasks for vCenter or Firewall Management Center .



PART V

Establish Secure Connections

- Virtual Private Network Management, on page 473



CHAPTER 17

Virtual Private Network Management

This chapter provides information about managing virtual private networks, including remote access virtual private networks and site-to-site virtual private networks.

- Configure Virtual Private Network Management, on page 473

Configure Virtual Private Network Management

A virtual private network (VPN) connection establishes a secure tunnel between endpoints over a public network such as the Internet.

This section applies to Remote Access and Site-to-site VPNs on Adaptive Security Appliances (ASA) FDM-managed device. It describes the Internet Protocol Security (IPsec) standards to build site-to-site VPNs connection on FTD. It also describes the SSL standards that are used to build and remote access VPN connections on ASAFTD.

For additional information about Virtual Private Networks, refer to the Cisco Firepower Threat Defense Configuration Guide for Firepower Device Manager.

Security Cloud Control supports the following types of VPN connections:

Introduction to Site-to-Site Virtual Private Network

A site-to-site VPN tunnel connects networks in different geographic locations. You can create site-to-site IPsec connections between managed devices and between managed devices and other Cisco or third-party peers that comply with all relevant standards. These peers can have any mix of inside and outside IPv4 and IPv6 addresses. Site-to-site tunnels are built using the Internet Protocol Security (IPsec) protocol suite and Internet Key Exchange version 2 (IKEv2). After the VPN connection is established, the hosts behind the local gateway can connect to the hosts behind the remote gateway through the secure VPN tunnel.

Simplifying Site-to-Site VPNs with Security Cloud Control Firewall Management

Site-to-Site VPNs are a reliable solution for securely connecting multiple networks over the internet. To make this process easier and more efficient, Security Cloud Control Firewall Management provides a **consolidated Site-to-Site VPN wizard**. This intuitive tool is designed to simplify the creation and management of secure VPN tunnels while reducing the complexity involved in traditional VPN configurations.

The Site-to-Site VPN wizard provides a single, unified interface for configuring VPN tunnels across a variety of managed devices. This consistency ensures a streamlined experience for administrators, regardless of the

specific device or network environment. By offering a centralized and intuitive configuration process, the wizard helps organizations enhance operational efficiency, reduce errors, and maintain a high level of security in their network infrastructure.

The table below specifies the permitted site-to-site VPN configurations for the managed devices.

	FDM-managed	Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense	Secure Firewall ASA	Multicloud Defense
FDM-managed	Yes	No	No	No
Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense	No	Yes	Yes	Yes
Secure Firewall ASA	No	Yes	Yes	Yes
Multicloud Defense	No	Yes	Yes	No

Site-to-Site VPN concepts

VPN Topology

To create a new site-to-site VPN topology you must provide a unique name, specify a topology type, choose the IKE version that is used for IPsec IKEv1 or IKEv2, or both and authentication method. Once configured, you deploy the topology to ASAFTD.

IPsec and IKE Protocols

In Security Cloud Control, site-to-site VPNs are configured based on IKE policies and IPsec proposals that are assigned to VPN topologies. Policies and proposals are sets of parameters that define the characteristics of a site-to-site VPN, such as the security protocols and algorithms that are used to secure traffic in an IPsec tunnel. Several policy types may be required to define a full configuration image that can be assigned to a VPN topology.

Authentication VPN Tunnels

For authentication of VPN connections, configure a pre-shared key in the topology on each device. Pre-shared keys allow a secret key, used during the IKE authentication phase, to be shared between two peers.

Virtual Tunnel Interface (VTI)

Security Cloud Control does not currently support the management, monitoring, or use of Virtual Tunnel Interface (VTI) tunnels on FTD. Devices with configured VTI tunnels can be onboarded to Security Cloud

Control but it ignores the VTI interfaces. If a security zone or static route references a VTI, Security Cloud Control reads the security zone and static route without the VTI reference.

VPN Encryption Domain

There are two methods to define the VPN's encryption domain: route-based or policy-based traffic selectors.

- **Policy-Based**: The encryption domain is set to allow any traffic which enters the IPSec tunnel. IPSec Local and remote traffic selectors are set to 0.0.0.0. This means that any traffic routed into the IPSec tunnel is encrypted regardless of the source/destination subnet. ASA supports policy-based VPN with crypto maps.
- **Route-Based**: The encryption domain is set to encrypt only specific IP ranges for both source and destination. It creates a virtual IPsec interface, and whatever traffic enters that interface is encrypted and decrypted. ASA supports route-based VPN with the use of Virtual Tunnel Interfaces (VTIs).

About Extranet Devices

You can add non-Cisco or unmanaged Cisco devices to a VPN topology as "Extranet" devices with either static or dynamic IP addresses.

- Non-Cisco Device: You cannot use Security Cloud Control to create and deploy configurations to non-Cisco devices.
- Unmanaged Cisco Device: Cisco device not managed by your organization, such as spokes in networks managed by other organizations within your company, or a connection to a service provider or partner's network.

Global IKE policies

Internet Key Exchange (IKE) is a key management protocol that is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

The IKE negotiation comprises two phases. Phase 1 negotiates a security association between two IKE peers, which enables the peers to communicate securely in Phase 2. During Phase 2 negotiation, IKE establishes SAs for other applications, such as IPsec. Both phases use proposals when they negotiate a connection. An IKE proposal is a set of algorithms that two peers use to secure the negotiation between them. IKE negotiation begins by each peer agreeing on a common (shared) IKE policy. This policy states which security parameters are used to protect subsequent IKE negotiations.

IKE policy objects define the IKE proposals for these negotiations. The objects that you enable are the ones used when the peers negotiate a VPN connection: you cannot specify different IKE policies per connection. The relative priority of each object determines which of these policies are tried first, with the lower number being a higher priority. The connection is not established if the negotiation fails to find a policy that both peers can support.

To define the global IKE policy, you select which objects to enable for each IKE version. If the pre-defined objects do not satisfy your requirements, create new policies to enforce your security policy.

Managing IKEv1 Policies

About IKEv1 Policy

Internet Key Exchange (IKE) version 1 policy objects contain the parameters required for IKEv1 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv1 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

Create an IKEv1 Policy

Internet Key Exchange (IKE) version 1 policy objects contain the parameters required for IKEv1 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv1 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv1 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Policy** link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 In the left pane, click **Objects**.

Step 3 Do one of these things:

- Click the blue plus button  and select **FDM** > **IKEv1 Policy** to create a new IKEv1 policy.
- In the object page, select the IKEv1 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 4 Enter an **object name**, up to 128 characters.

Step 5 Configure the IKEv1 properties.

- **Priority** - The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **Encryption** - The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. For an explanation of the options, see Deciding Which Encryption Algorithm to Use.

- **Diffie-Hellman Group** - The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use.
- **Lifetime** - The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).
- **Authentication** - The method of authentication to use between the two peers. For more information, see Deciding Which Authentication Method to Use.
  - **Preshared Key** - Use the preshared key that is defined on each device. These keys allow for a secret key to be shared between two peers and to be used by IKE during the authentication phase. If the peer is not configured with the same preshared key, the IKE SA cannot be established.
  - **Certificate** - Use the device identity certificates for the peers to identify each other. You must obtain these certificates by enrolling each peer in a Certificate Authority. You must also upload the trusted CA root and intermediate CA certificates used to sign the identity certificates in each peer. The peers can be enrolled in the same or a different CA. You cannot use self-signed certificates for either peer.
- **Hash** - The hash algorithm for creating a message digest, which is used to ensure message integrity. For an explanation of the options, see Deciding Which Hash Algorithms to Use.

Step 6 Click **Add**.

Managing IKEv2 Policies

About IKEv2 Policy

Internet Key Exchange (IKE) version 2 policy objects contain the parameters required for IKEv2 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv2 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

Create an IKEv2 Policy

Internet Key Exchange (IKE) version 2 policy objects contain the parameters required for IKEv2 policies when defining VPN connections. IKE is a key management protocol that facilitates the management of IPsec-based communications. It is used to authenticate IPsec peers, negotiate and distribute IPsec encryption keys, and automatically establish IPsec security associations (SAs).

There are several pre-defined IKEv2 policies. If any suit your needs, simply enable them by clicking the State toggle. You can also create new policies to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create an IKEv2 policy while editing the IKE settings in a Site-to-Site VPN connection by clicking the **Create New IKEv2 Policy** link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 In the left pane, click **Objects**.

Step 3 Do one of these things:

- Click the blue plus button  and select **FDM** > **IKEv2 Policy** to create a new IKEv2 policy.
- In the object page, select the IKEv2 policy you want to edit and click **Edit** in the Actions pane at the right.

Step 4 Enter an **object name**, up to 128 characters.

Step 5 Configure the IKEv2 properties.

- **Priority** - The relative priority of the IKE policy, from 1 to 65,535. The priority determines the order of the IKE policy compared by the two negotiating peers when attempting to find a common security association (SA). If the remote IPsec peer does not support the parameters selected in your highest priority policy, it tries to use the parameters defined in the next lowest priority. The lower the number, the higher the priority.
- **State** - Whether the IKE policy is enabled or disabled. Click the toggle to change the state. Only enabled policies are used during IKE negotiations.
- **Encryption** - The encryption algorithm used to establish the Phase 1 security association (SA) for protecting Phase 2 negotiations. Select all algorithms that you want to allow, although you cannot include both mixed-mode (AES-GCM) and normal mode options in the same policy. (Normal mode requires that you select an integrity hash, whereas mixed-mode prohibits a separate integrity hash selection.) The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use.
- **Diffie-Hellman Group** - The Diffie-Hellman group to use for deriving a shared secret between the two IPsec peers without transmitting it to each other. A larger modulus provides higher security but requires more processing time. The two peers must have a matching modulus group. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest group until a match is agreed upon. For an explanation of the options, see Deciding Which Diffie-Hellman Modulus Group to Use.
- **Integrity Hash** - The integrity portion of the hash algorithm for creating a message digest, which is used to ensure message integrity. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. The integrity hash is not used with the AES-GCM encryption options. For an explanation of the options, see Deciding Which Hash Algorithms to Use.
- **Pseudo-Random Function (PRF) Hash** - The pseudo-random function (PRF) portion of the hash algorithm, which is used as the algorithm to derive keying material and hashing operations required for the IKEv2 tunnel encryption. In IKEv1, the Integrity and PRF algorithms are not separated, but in IKEv2, you can specify different algorithms for these elements. Select all the algorithms that you want to allow.

The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Hash Algorithms to Use.

- **Lifetime** - The lifetime of the security association (SA), in seconds, from 120 to 2147483647 or blank. When the lifetime is exceeded, the SA expires and must be renegotiated between the two peers. As a general rule, the shorter the lifetime (up to a point), the more secure your IKE negotiations will be. However, with longer lifetimes, future IPsec security associations can be set up more quickly than with shorter lifetimes. The default is 86400. To specify an unlimited lifetime, enter no value (leave the field blank).

Step 6 Click **Add**.

IPsec proposal and IKE policy objects

IPsec is one of the most secure methods for setting up a VPN. IPsec provides data encryption at the IP packet level, offering a robust security solution that is standards-based. With IPsec, data is transmitted over a public network through tunnels. A tunnel is a secure, logical communication path between two peers. Traffic that enters an IPsec tunnel is secured by a combination of security protocols and algorithms called a transform set. During the IPsec security association (SA) negotiation, peers search for a transform set that is the same at both peers.

There are separate IPsec proposal objects based on the IKE version, IKEv1, or IKEv2:

- When you create an IKEv1 IPsec proposal, you select the mode in which IPsec operates, and define the required encryption and authentication types. You can select single options for the algorithms. If you want to support multiple combinations in a VPN, create and select multiple IKEv1 IPsec Proposal objects.
- When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and antireplay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

Managing an IKEv1 IPsec Proposal Object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel. There are separate objects for IKEv1 and IKEv2. Currently, Security Cloud Control supports IKEv1 IPsec proposal objects.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and anti-replay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

Create an IKEv1 IPsec Proposal Object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel. There are separate objects for IKEv1 and IKEv2. Currently,Security Cloud Control supports IKEv1 IPsec proposal objects.

The Encapsulating Security Protocol (ESP) is used for both IKEv1 and IKEv2 IPsec proposals. It provides authentication, encryption, and anti-replay services. ESP is IP protocol type 50.

Note We recommend using both encryption and authentication on IPsec tunnels.

There are several pre-defined IKEv1 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv1 IPsec Proposals objects while editing the IKEv1 IPsec settings in a Site-to-Site VPN connection by clicking the **Create New IKEv1 Proposal** link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click the blue plus button and select **FDM** > **IKEv1 IPsec Proposal** to create the new object.
- In the object page, select the IPsec proposal you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Select the Mode in which the IKEv1 IPsec Proposal object operates.

- **Tunnel mode** encapsulates the entire IP packet. The IPSec header is added between the original IP header and a new IP header. This is the default. Use tunnel mode when the firewall is protecting traffic to and from hosts positioned behind the firewall. Tunnel mode is the normal way regular IPSec is implemented between two firewalls (or other security gateways) that are connected over an untrusted network, such as the Internet.
- **Transport mode** encapsulates only the upper-layer protocols of an IP packet. The IPSec header is inserted between the IP header and the upper-layer protocol header (such as TCP). Transport mode requires that both the source and destination hosts support IPSec, and can only be used when the destination peer of the tunnel is the final destination of the IP packet. Transport mode is generally used only when protecting a Layer 2 or Layer 3 tunneling protocol such as GRE, L2TP, and DLSW.

Step 5 Select the **ESP Encryption** (Encapsulating Security Protocol encryption) algorithm for this proposal. For more information, see Deciding Which Encryption Algorithm to Use.

Step 6 Select the **ESP Hash** or integrity algorithm to use for authentication. For more information, see Deciding Which Hash Algorithms to Use.

Step 7 Click **Add**.

Managing an IKEv2 IPsec Proposal Object

IPsec Proposal objects configure the IPsec proposal used during IKE Phase 2 negotiations. The IPsec proposal defines the combination of security protocols and algorithms that secure traffic in an IPsec tunnel.

When you create an IKEv2 IPsec proposal, you can select all of the encryption and hash algorithms allowed in a VPN. The system orders the settings from the most secure to the least secure and negotiates with the peer until a match is found. This allows you to potentially send a single proposal to convey all the allowed combinations instead of the need to send each allowed combination individually as with IKEv1.

Create or Edit an IKEv2 IPsec Proposal Object

There are several pre-defined IKEv2 IPsec proposals. You can also create new proposals to implement other combinations of security settings. You cannot edit or delete system-defined objects.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create IKEv2 IPsec Proposals objects while editing the IKEv2 IPsec settings in a VPN connection by clicking the Create New IPsec Proposal link shown in the object list.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Do one of these things:

- Click the blue plus button  and select **FDM** > **IKEv2 IPsec Proposal** to create the new object.
- In the object page, select the IPsec proposal you want to edit and click **Edit** in the Actions pane at the right.

Step 3 Enter an **object name** for the new object.

Step 4 Configure the IKE2 IPsec proposal objects:

- **Encryption** - The Encapsulating Security Protocol (ESP) encryption algorithm for this proposal. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Encryption Algorithm to Use.
- **Integrity Hash** - The hash or integrity algorithm to use for authentication. Select all the algorithms that you want to allow. The system negotiates with the peer, starting from the strongest to the weakest algorithm until a match is agreed upon. For an explanation of the options, see Deciding Which Hash Algorithms to Use.

Step 5 Click **Add**.

Encryption and Hash Algorithms Used in VPN

Because a VPN tunnel typically traverses a public network, most likely the Internet, you need to encrypt the connection to protect the traffic. You define the encryption and other security techniques to apply using IKE policies and IPsec proposals.

If your device license allows you to apply strong encryption, there is a wide range of encryption and hash algorithms, and Diffie-Hellman groups, from which to choose. However, as a general rule, the stronger the encryption that you apply to the tunnel, the worse the system performance. Find a balance between security and performance that provides sufficient protection without compromising efficiency.

We cannot provide specific guidance on which options to choose. If you operate within a larger corporation or other organization, there might already be defined standards that you need to meet. If not, take the time to research the options.

The following topics explain the available options:

Deciding Which Encryption Algorithm to Use

When determining which encryption algorithms to use for the IKE policy or IPsec proposal, your choice is limited to algorithms supported by the devices in the VPN.

For IKEv2, you can configure multiple encryption algorithms. The system orders the settings from the most secure to the least secure and negotiates with the peer using that order. For IKEv1, you can select a single option only.

For IPsec proposals, the algorithm is used by the Encapsulating Security Protocol (ESP), which provides authentication, encryption, and anti-replay services. ESP is IP protocol type 50. In IKEv1 IPsec proposals, the algorithm name is prefixed with ESP.

If your device license qualifies for strong encryption, you can choose from the following encryption algorithms. If you are not qualified for strong encryption, you can select DES only.

- AES-GCM - (IKEv2 only.) Advanced Encryption Standard in Galois/Counter Mode is a block cipher mode of operation providing confidentiality and data-origin authentication and provides greater security than AES. AES-GCM offers three different key strengths: 128-, 192-, and 256-bit keys. A longer key provides higher security but a reduction in performance. GCM is a mode of AES that is required to support NSA Suite B. NSA Suite B is a set of cryptographic algorithms that devices must support to meet federal standards for cryptographic strength.
- AES-GMAC - (IKEv2 IPsec proposals only.) Advanced Encryption Standard Galois Message Authentication Code is a block cipher mode of operation providing only data-origin authentication. It is a variant of AES-GCM that allows data authentication without encrypting the data. AES-GMAC offers three different key strengths: 128-, 192-, and 256-bit keys.
- AES - Advanced Encryption Standard is a symmetric cipher algorithm that provides greater security than DES and is computationally more efficient than 3DES. AES offers three different key strengths: 128-, 192-, and 256-bit keys. A longer key provides higher security but a reduction in performance.
- DES - Data Encryption Standard, which encrypts using 56-bit keys, is a symmetric secret-key block algorithm. If your license account does not meet the requirements for export controls, this is your only option. It is faster than 3DES and uses fewer system resources, but it is also less secure. If you do not need strong data confidentiality, and if system resources or speed is a concern, choose DES.

- 3DES - Triple DES, which encrypts three times using 56-bit keys, is more secure than DES because it processes each block of data three times with a different key. However, it uses more system resources and is slower than DES.
- NULL - A null encryption algorithm provides authentication without encryption. This is typically used for testing purposes only.

Deciding Which Hash Algorithms to Use

In IKE policies, the hash algorithm creates a message digest, which is used to ensure message integrity. In IKEv2, the hash algorithm is separated into two options, one for the integrity algorithm, and one for the pseudo-random function (PRF).

In IPsec proposals, the hash algorithm is used by the Encapsulating Security Protocol (ESP) for authentication. In IKEv2 IPsec Proposals, this is called the integrity hash. In IKEv1 IPsec proposals, the algorithm name is prefixed with ESP-, and there is also an -HMAC suffix (which stands for "hash method authentication code").

For IKEv2, you can configure multiple hash algorithms. The system orders the settings from the most secure to the least secure and negotiates with the peer using that order. For IKEv1, you can select a single option only.

You can choose from the following hash algorithms:

- SHA (Secure Hash Algorithm) - Standard SHA (SHA-1) produces a 160-bit digest. SHA is more resistant to brute-force attacks than MD5. However, it is also more resource-intensive than MD5. For implementations that require the highest level of security, use the SHA hash algorithm.
- The following SHA-2 options, which are even more secure, are available for IKEv2 configurations. Choose one of these if you want to implement the NSA Suite B cryptography specification.
  - SHA-256 - Specifies the Secure Hash Algorithm SHA-2 with the 256-bit digest.
  - SHA-384 - Specifies the Secure Hash Algorithm SHA-2 with the 384-bit digest.
  - SHA-512 - Specifies the Secure Hash Algorithm SHA-2 with the 512-bit digest.
- MD5 (Message Digest 5) - Produces a 128-bit digest. MD5 uses less processing time for overall faster performance than SHA, but it is considered to be weaker than SHA.
- Null or None (NULL, ESP-NONE) - (IPsec Proposals only.) A null Hash Algorithm; this is typically used for testing purposes only. However, you should choose the null integrity algorithm if you select one of the AES-GCM/GMAC options as the encryption algorithm. Even if you choose a non-null option, the integrity hash is ignored for these encryption standards.

Deciding Which Diffie-Hellman Modulus Group to Use

You can use the following Diffie-Hellman key derivation algorithms to generate IPsec security association (SA) keys. Each group has different size modules. A larger modulus provides higher security but requires more processing time. You must have a matching modulus group on both peers.

If you select AES encryption, to support the large key sizes required by AES, you should use Diffie-Hellman (DH) Group 5 or higher. IKEv1 policies do not support all of the groups listed below.

To implement the NSA Suite B cryptography specification, use IKEv2 and select one of the elliptic curves Diffie-Hellman (ECDH) options: 19, 20, or 21. Elliptic curve options and groups that use 2048-bit modulus are less exposed to attacks such as Logjam.

For IKEv2, you can configure multiple groups. The system orders the settings from the most secure to the least secure and negotiates with the peer using that order. For IKEv1, you can select a single option only.

- 2 - Diffie-Hellman Group 2: 1024-bit modular exponential (MODP) group. This option is no longer considered good protection.
- 5 - Diffie-Hellman Group 5: 1536-bit MODP group. Formerly considered good protection for 128-bit keys, this option is no longer considered good protection.
- 14 - Diffie-Hellman Group 14: 2048-bit modular exponential (MODP) group. Considered good protection for 192-bit keys.
- 19 - Diffie-Hellman Group 19: National Institute of Standards and Technology (NIST) 256-bit elliptic curve modulo a prime (ECP) group.
- 20 - Diffie-Hellman Group 20: NIST 384-bit ECP group.
- 21 - Diffie-Hellman Group 21: NIST 521-bit ECP group.
- 24 - Diffie-Hellman Group 24: 2048-bit MODP group with 256-bit prime order subgroup. This option is no longer recommended.

Deciding Which Authentication Method to Use

You can use the following methods to authenticate the peers in a site-to-site VPN connection.

Preshared Keys

Preshared keys are secret key strings configured on each peer in the connection. These keys are used by IKE during the authentication phase. For IKEv1, you must configure the same preshared key on each peer. For IKEv2, you can configure unique keys on each peer.

Preshared keys do not scale well compared to certificates. If you need to configure a large number of site-to-site VPN connections, use the certificate method instead of the preshared key method.

Site-to-Site VPN configuration for FDM-Managed

Security Cloud Control supports these aspects of site-to-site VPN functionality on FDM-managed devices:

- Both IPsec IKEv1 & IKEv2 protocols are supported.
- Automatic or manual pre-shared keys for authentication.
- IPv4 and IPv6. All combinations of inside and outside are supported.
- IPsec IKEv2 site-to-site VPN topologies provide configuration settings to comply with Security Certifications.
- Static and dynamic interfaces.
- Support for the dynamic IP address for the extranet device as an endpoint.

Configure Site-to-Site VPN Connections with Dynamically Addressed Peers

Security Cloud Control allows you to create a site-to-site VPN connection between peers when one of the peers' VPN interface IP address is not known or when the interface obtains its address from a DHCP server.

Any dynamic peer whose preshared key, IKE settings, and IPsec configurations match with another peer can establish a site-to-site VPN connection.

Consider two peers, A and B. The static peer is a device whose IP address of its VPN interface is fixed and a dynamic peer is a device whose IP address of the VPN interface is not known or has a temporary IP address.

The following use cases describe different scenarios for establishing a secure site-to-site VPN connection with dynamically-addressed peers:

- A is a static peer, and B is a dynamic peer or conversely.
- A is a static peer, and B is a dynamic peer with a resolved IP address from the DHCP server or conversely. You can select **Bind VPN to the assigned IP** to establish the VPN connection between the IP address of the static peer and the DHCP assigned IP address of the dynamic peer.
- A and B are dynamic with resolved IP addresses from the DHCP server. In such a case, you must select **Bind VPN to the assigned IP** for at least one peer to establish the VPN connection between the IP address of the static peer and the DHCP assigned IP address of the dynamic peer.
- A is a dynamic peer, and B is an extranet device with a static or dynamic IP address.
- A is a dynamic peer with a resolved IP address from the DHCP server, and B is an Extranet device with a static or dynamic IP address. You can select **Bind VPN to the assigned IP** to establish the VPN connection between the IP address of the static peer and the DHCP assigned IP address of the dynamic peer.

Important If you select **Bind VPN to the assigned IP**, the VPN binds statically to the DHCP assigned IP address. However, this dynamic interface can receive many new IP addresses after the peer restarts. Although the VPN tunnel updates the new IP address, the other peer is not updated with the new configuration. You must deploy the site-to-site configuration again for out-of-band changes on the other peer.

Note If the IP address of the interface is changed by using a local manager like Firewall Device Manager, the **Configuration Status** of that peer in Security Cloud Control shows "Conflict Detected". When you resolve this out-of-band change, the **Configuration Status** of the other peer changes to the "Not Synced" state. You must deploy the Security Cloud Control configuration to the device which is in "Not Synced" state.

Typically, the dynamic peer must be the one that initiates the connection as the other peer would not know the IP address of the dynamic peer. When the remote peer attempts to establish the connection, the other peer validates the connection using the preshared key, IKE settings, and IPsec configurations.

Because the VPN connection is established only after the remote peer initiates the connection, any outbound traffic that matches access control rules that allow traffic in the VPN tunnel will be dropped until that connection is established. This ensures that data does not leave your network without the appropriate encryption and VPN protection.

Note A site-to-site VPN connection cannot be configured in the following scenarios:

- If both peers have DHCP assigned IP addresses.

- **Workaround**: You can configure a site-to-site VPN, if one of the peers has a resolved IP address from the DHCP server. In such a case, you must select **Bind VPN to the assigned IP** to configure site-to-site VPN.

- If a device has more than one dynamic peer connection.
  - **Workaround**: You can configure a site-to-site VPN by performing the following steps:
    - Consider three devices A, B, and C.
    - Configure site-to-site VPN connection between A (static peer) and B (dynamic peer).
    - Configure site-to-site VPN connection between A and C (dynamic peer) by creating an Extranet device. Assign the static VPN interface IP address of A to the Extranet device and establish a connection with C.

FDM-Managed Device Site-to-Site VPN Guidelines and Limitations

- Security Cloud Control does not support a crypto-acl to design the interesting traffic for S2S VPN. It only supports protected networks.
- Security Cloud Control does not currently support the management, monitoring, or use of Virtual Tunnel Interface (VTI) tunnels on ASA or FDM-managed devices. Devices with configured VTI tunnels can be onboarded to Security Cloud Control but it ignores the VTI interfaces. If a security zone or static route references a VTI, Security Cloud Control reads the security zone and static route without the VTI reference. Security Cloud Control support for VTI tunnels is coming soon.
- Whenever IKE ports 500/4500 are in use or when there are some PAT translations that are active, the site-to-site VPN cannot be configured on the same ports as it fails to start the service on those ports.
- Transport mode is not supported only tunnel mode. IPsec tunnel mode encrypts the entire original IP datagram which becomes the payload in a new IP packet. Use tunnel mode when the firewall is protecting traffic to and from hosts positioned behind a firewall. Tunnel mode is the normal way regular IPsec is implemented between two firewalls (or other security gateways) that are connected over an untrusted network, such as the Internet.
- For this release, only PTP topology is supported, containing one or more VPN tunnels. Point-to-point (PTP) deployments establish a VPN tunnel between two endpoints.

Create a Site-To-Site VPN Tunnel Between FDM-managed Devices

Note that an FDM-managed device has the capability to establish a secure VPN tunnel either with another FDM-managed device or with an extranet device.

Procedure

Step 1 In the left pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Click the **Create Tunnel** ( ) icon and then click **Site-to-Site VPN**.

Step 3 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.

  We recommend naming your topology to indicate that it is an FDM-managed device VPN, and its topology type.

- **Peer 1**: Click the **FDM** tab and select an FDM-managed device.
- **Peer 2**: Click the **FDM** tab and select an FDM-managed device.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

  Note
  If one or both endpoint devices have dynamic IP addresses, see Configure Site-to-Site VPN Connections with Dynamically-Addressed Peers for additional instructions.

Step 4 Click **Next**.

Step 5 In the **Peer Details** area, provide the following information:

- **VPN Access Interface**: Select the interface to establish a connection between peer 1 and peer 2.
- **Routing**: Click **Add Networks** and select one or more protected networks to establish a site-to-site tunnel between the protected networks of peer 1 and peer 2
- (Optional) **NAT Exempt Interface**: Select **NAT Exempt** for peer 1 and peer 2 to exempt the VPN traffic from NAT policies on the local VPN access interface. It must be configured manually for individual peers. If you do not want NAT rules to apply to the local network, select the interface that hosts the local network. This option works only if the local network resides behind a single routed interface (not a bridge group member). If the local network is behind more than one routed interface or one or more bridge group members, you must manually create the NAT exempt rules.

Step 6 Click **Next**.

Step 7 In the **IKE Settings** area, choose the IKE versions to use during Internet Key Exchange (IKE) negotiations and specify the privacy configurations: For more information on the IKE policies, see Configuring the Global IKE Policy.

Note
IKE policies are global to a device and apply to all VPN tunnels associated with it. Therefore, adding or deleting policies affect all VPN tunnels in which this device is participating.

a. Select either or both options as appropriate.

Note
By default, **IKEV Version 2** is enabled.

b. Click **Add IKEv2 Policies** to select the IKEv2 policies for peer 1 and peer 2.

c. The **Local Pre-Shared Key** and **Remote Pre-Shared Key** for the participating devices are auto-genreated. Preshared keys are secret key strings configured on each peer in the connection. These keys are used by IKE during the authentication phase.

d. Click **IKE Version 1** to enable it.

e. Click **Add IKEv1 Policies** to select the IKEv1 policies for peer 1 and peer 2.

f. The **IPEv1 Pre-Shared Key** is auto-generated.

Step 8 Click **Next**.

Step 9 In the **IPSec Settings** area, specify the IPSec configurations for peer 1 and peer 2. The corresponding IKEV proposals are available depending on the selection that is made in the **IKE Settings** step.

For more information on the IPSec settings, see the IPsec proposal and IKE policy objects, on page 74.

a. Click **Add IKEv2 IPSec Proposals** and select the IKEv2 proposals you want for peer 1 and peer 2.

b. Choose the **Diffie-Hellman Group for Perfect Forward Secrecy**. For more information, see Deciding Which Diffie-Hellman Modulus Group to Use.

c. Click **Next**.

Step 10 In the **Finish** area, you will find a summary of the configurations you have completed.

Read the configuration and then click **Submit** if you're satisfied.

Configure Networking for Protected Traffic Between the Site-To-Site Peers

After completing the configuring of the Site-To-Site connection, make sure that you perform the following configuration for VPN to function on all targeted devices.

Procedure

Step 1 Configure AC policies:

Configure AC policies for permitting bidirectional traffic between the protected networks behind both peers. These policies help the packets to traverse to the intended destination without being dropped.

Note
You must create AC policies for incoming and outgoing traffic on both peers.

a. In the Security Cloud Control navigation bar at the left, click **Policies** and select the option that you want.

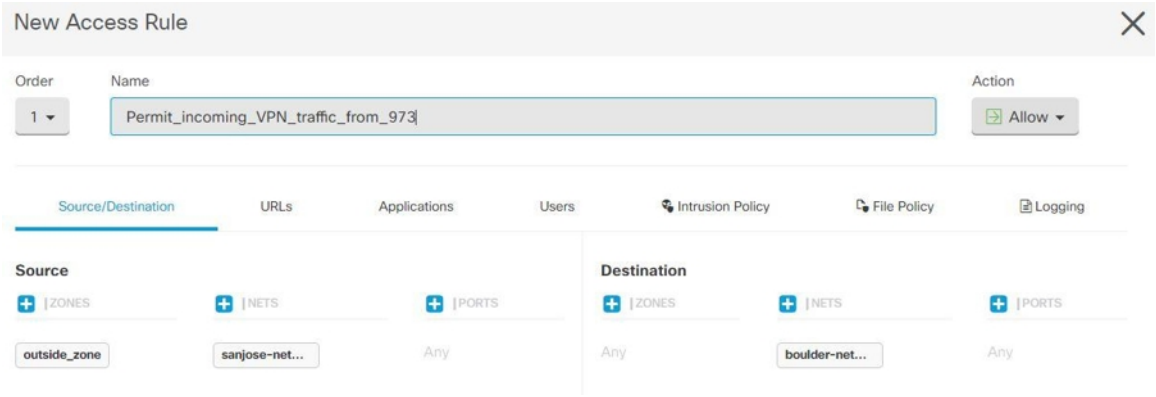
b. Create policies for incoming and outgoing traffic on both peers.

The following example shows steps for creating AC policies on both peers.

Consider two FDM-managed devices 'FTD_BGL_972' and 'FTD_BGL_973' with Site-To-Site VPN connection between two protected networks 'boulder-network' and 'sanjose-network' respectively.

Creating the AC policy for permitting incoming traffic:

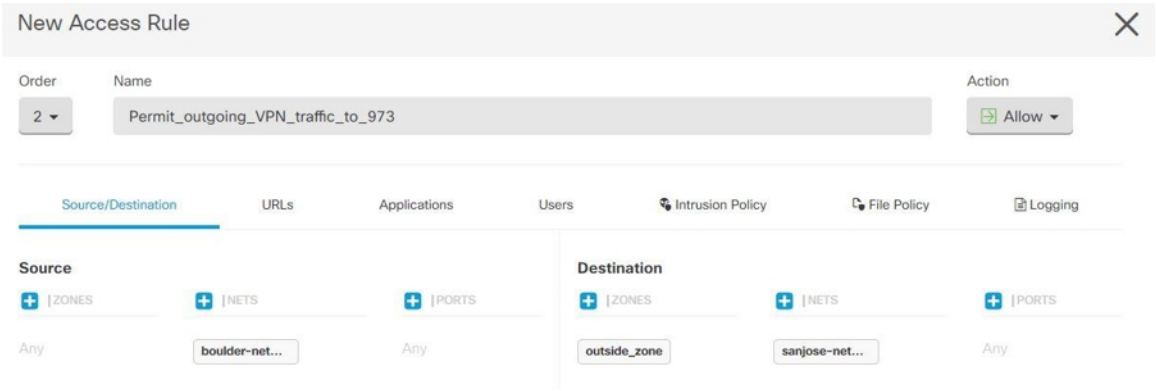
The policy 'Permit_incoming_VPN_traffic_from_973' is created on the 'FTD_BGL_972' device for allowing incoming traffic from the peer ('FTD_BGL_973').



- **Source Zone**: Set the zone of the peer device from which the network traffic originates. In this example, the traffic is originating from FTD_BGL_973 and reaching FTD_BGL_972.
- **Source Network**: Set the protected network of the peer device from which the network traffic originates. In this example, traffic is originating from 'sanjose-network' which is the protected network behind the peer device (FTD_BGL_973).
- **Destination Network**: Set the protected network of the device on which the network traffic arrives. In this example, traffic is arriving at 'boulder-network' which is the protected network behind the peer device (FTD_BGL_972). **Note**: The remaining fields can have the default value ("Any").
- Set **Action** to **Allow** for allowing the traffic subject to the intrusion and other inspection settings in the policy.

Creating the AC policy for permitting outgoing traffic:

The policy 'Permit_outgoing_VPN_traffic_to_973' is created on the 'FTD_BGL_972' device for permitting outgoing traffic to the peer ('FTD_BGL_973').



- **Source Network**: Set the protected network of the peer device from which the network traffic originates. In this example, traffic is originating from 'boulder-network' which is the protected network behind the peer device (FTD_BGL_972).
- **Destination Zone**: Set the zone of the peer device on which the network traffic arrives. In this example, the traffic is arriving from FTD_BGL_972 and reaching FTD_BGL_973.

- **Destination Network**: Set the protected network of the peer on which the network traffic arrives. In this example, traffic is arriving on 'sanjose-network' which is the protected network behind the peer device (FTD_BGL_972). **Note**: The remaining fields can have the default value ("Any").
- Set **Action** to **Allow** for allowing the traffic subject to the intrusion and other inspection settings in the policy.

After creating AC policies on one device, you must create similar policies on its peer.

Step 2 If NAT is configured on either of the peer devices, you need to configure the NAT exempt rules manually. See Exempting Site-to-Site VPN Traffic from NAT.

Step 3 Configure routing for receiving the return VPN traffic on each peer.

a. **Gateway**-Select the network object that identifies the IP address for the gateway to the destination network. Traffic is sent to this address.

b. **Interface**-Select the interface through which you want to send traffic. In this example, the traffic is sent through 'outside' interface.

c. **Destination Networks**-Select one or network objects, that identify the destination network. In this example, the destination is 'sanjose-network' which is behind peer (FTD_BGL_973).

After configuring routing settings on one device, you must configure similar settings on its peer.

Edit an Existing Security Cloud Control Site-To-Site VPN

The advanced configuration wizard is used by default to modify an existing site-to-site VPN configuration.

Procedure

Step 1 In the navigation pane, choose **VPN** > **Site-to-Site VPN**.

Step 2 In the left pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 3 Select the desired site-to-site VPN tunnel that you want to edit.

Step 4 In the **Actions** pane, click **Edit**.

Note
Alternatively, you can perform the following to edit the configuration:

a. Open the VPN page and click **Global View** button in the filter panel (for more information, see Global View).

The illustration of all site-to-site VPN tunnels available across all devices appears.

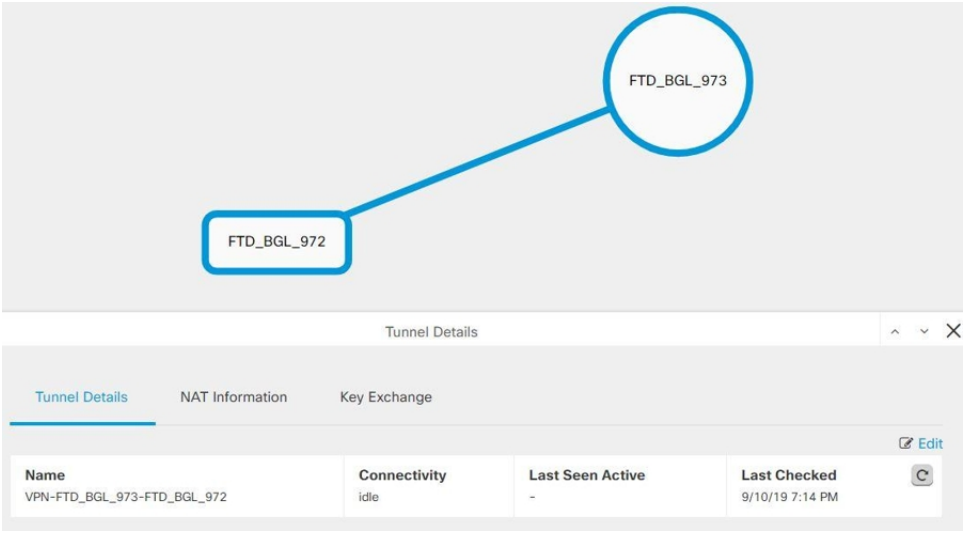
To edit the configuration, one of the peers must be FDM-managed device.

b. Select a device by clicking the box.

c. Click **View details** to view its peers.

d. Click the peer device to view the tunnel details.

You can view the tunnel details, NAT information, and key exchange information pertaining to the device.



e. Click **Edit** in **Tunnel Details**.

Step 5 In the **Peer Devices** section, you can modify the following device configurations: Configuration Name, VPN Access Interface, and Protected Networks.

Note
You cannot change the participating devices.

Step 6 In the **IKE Settings** section, you can modify the following IKEv2 policies configurations:

a. Click the blue plus button for the respective device and select new IKEv2 policies. To delete an existing IKEv2 Policy, hover-over the selected policy and click the **x** icon.

b. Modify the **Pre-Shared Key** for the participating devices. If the pre-shared keys are different for endpoint devices, click the blue settings button and enter the appropriate pre-shared keys for the devices.

c. Click **Next**.

Step 7 In the **IPSec Settings** section, you can modify the following IPSec configurations:

a. Click the blue plus button to select new IKEv2 proposals. To delete an existing IKEv2 Proposal, hover-over the selected proposal and click the **x** icon.

b. Choose the **Diffie-Hellman Group for Perfect Forward Secrecy**.

c. Click **Edit VPN**, and then **Finish**.

The Point to point VPN is modified and updated with all the changes you have made.

Delete a Security Cloud Control Firewall Management Site-To-Site VPN Tunnel

Procedure

Step 1 In the left pane, click **Secure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select the desired site-to-site VPN tunnel that you want to delete.

Step 3 In the **Actions** pane on the right, click **Delete**.

The selected site-to-site VPN tunnel is deleted.

Exempt Site-to-Site VPN Traffic from NAT

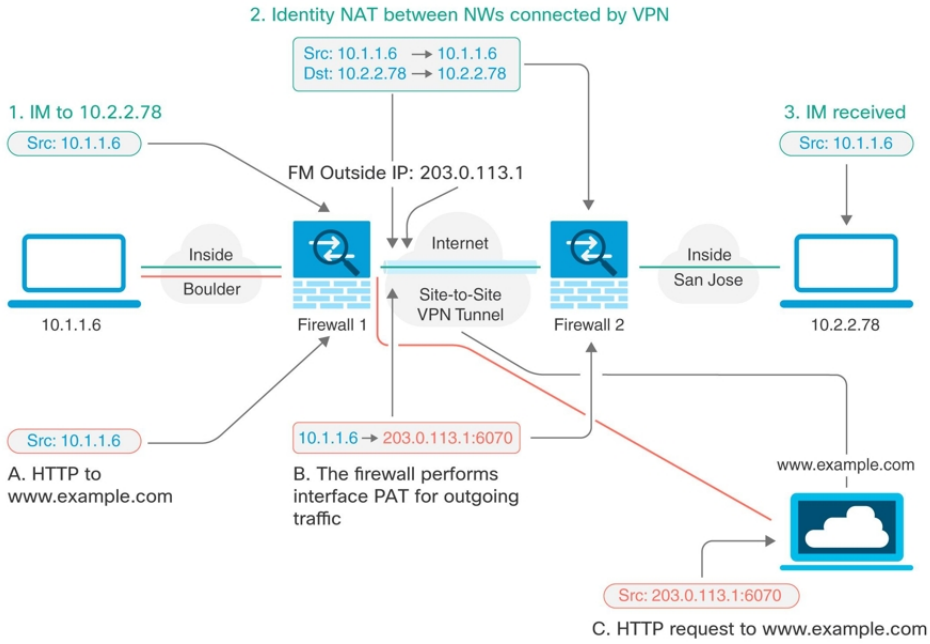
When you have a site-to-site VPN connection defined on an interface, and you also have NAT rules for that interface, you can optionally exempt the traffic on the VPN from the NAT rules. You might want to do this if the remote end of the VPN connection can handle your internal addresses.

When you create the VPN connection, you can select the **NAT Exempt** option to create the rules automatically. However, this works only if your local protected network is connected through a single routed interface (not a bridge group member). If instead, the local networks in the connection reside behind two or more routed interfaces or one or more bridge group members, you need to configure the NAT exempt rules manually.

To exempt VPN traffic from NAT rules, you create an identity manual NAT rule for the local traffic when the destination is the remote network. Then, apply NAT to the traffic when the destination is anything else (for example, the Internet). If you have more than one interface for the local network, create rules for each interface. Also, consider the following suggestions:

- If there is more than one local network in the connection, create a network object group to hold the objects that define the networks.
- If you are including both IPv4 and IPv6 networks in the VPN, create separate identity NAT rules for each.

Consider the following example, which shows a site-to-site tunnel connecting the Boulder and San Jose offices. For traffic that you want to go to the Internet (for example from 10.1.1.6 in Boulder to www.example.com), you need a public IP address provided by NAT to access the Internet. The below example uses interface Port Address Translation (PAT) rules. However, for traffic that you want to go over the VPN tunnel (for example from 10.1.1.6 in Boulder to 10.2.2.78 in San Jose), you do not want to perform NAT; you need to exempt that traffic by creating an identity NAT rule. Identity NAT translates an address to the same address.



The following example explains the configuration for Firewall1 (Boulder). The example assumes that the inside interface is a bridge group, so you need to write the rules for each member interface. The process is the same if you have a single or multiple routed inside interfaces.

Note This example assumes IPv4 only. If the VPN also includes IPv6 networks, create parallel rules for IPv6. Note that you cannot implement IPv6 interface PAT, so you need to create a host object with a unique IPv6 address to use for PAT.

Procedure

Step 1 Create objects to define the various networks.

a. In the left pane, click **Objects**.

b. In the left pane, click **Objects**.

c. Click the blue plus button to create an object.

d. Click **FTD** > **Network**.

e. Click **ASA** > **Network**.

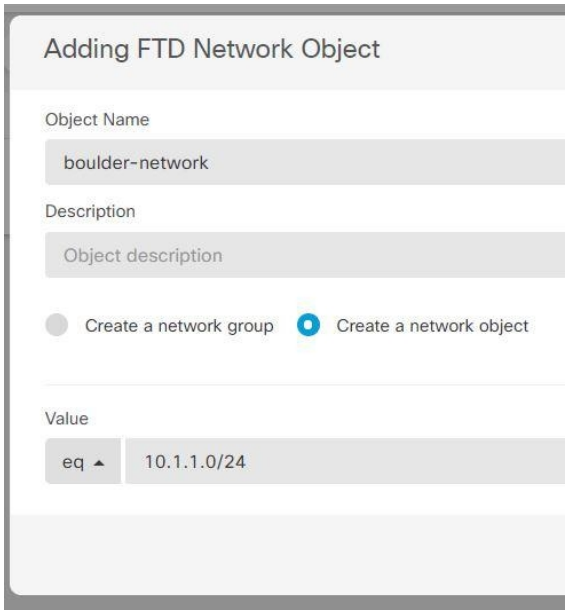
f. Identify the Boulder inside network.

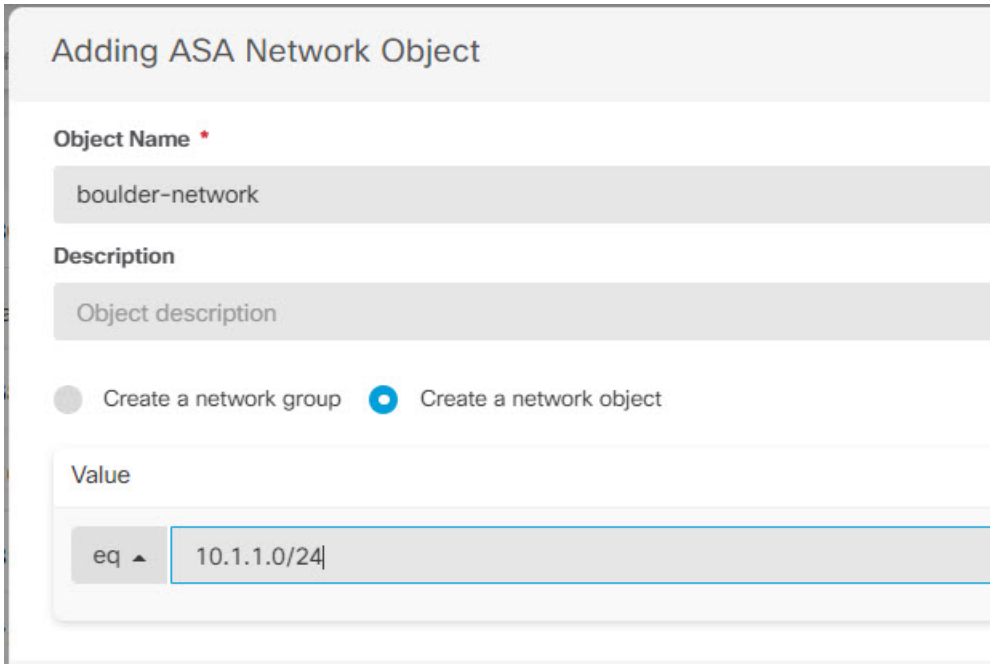
g. Enter an object name (for example, boulder-network).

h. Select **Create a network object**.

i. In the Value section:

- Select **eq** and enter a single IP address or a subnet address expressed in CIDR notation.
- Select **range** and enter an IP address range. For example, enter the network address as 10.1.1.0/24.





j. Click **Add**.

k. Click the blue plus button  to create an object.

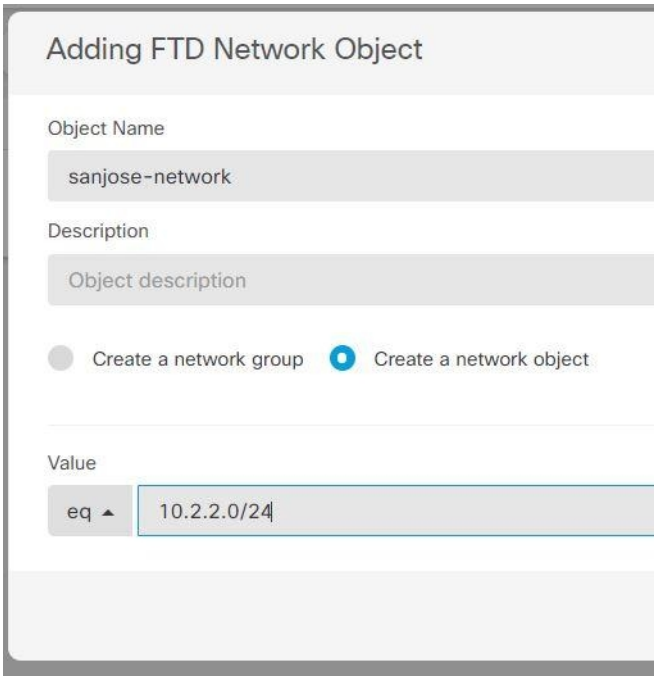
l. Define the inside San Jose network.

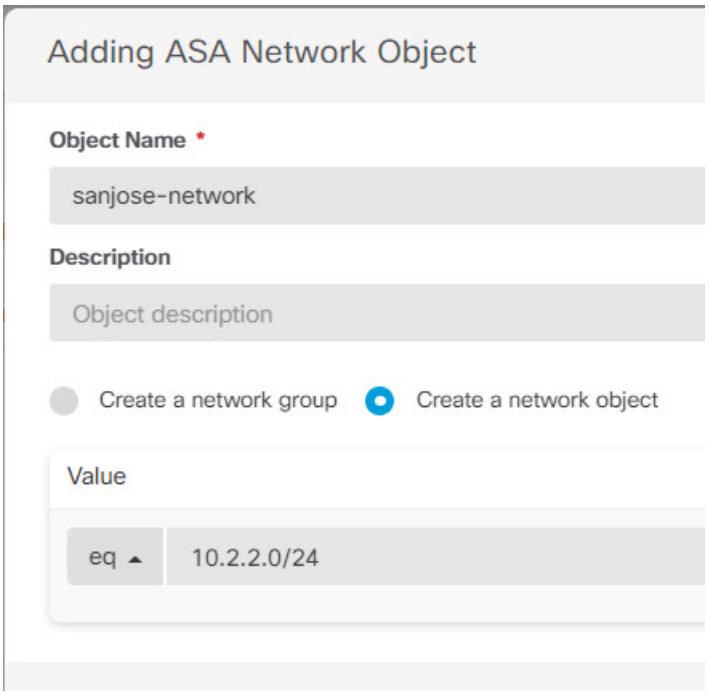
m. Enter the object name (for example, san-jose).

n. Select **Create a network object**.

o. In the Value section:

- Select **eq** and enter a single IP address or a subnet address expressed in CIDR notation.
- Select **range** and enter an IP address range. For example, enter the network address as 10.1.1.0/24.





p. Click **Add**.

Step 2 Configure manual identity NAT for the Boulder network when going over the VPN to San Jose on Firewall1 (Boulder).

a. In the left pane, click **Inventory**.

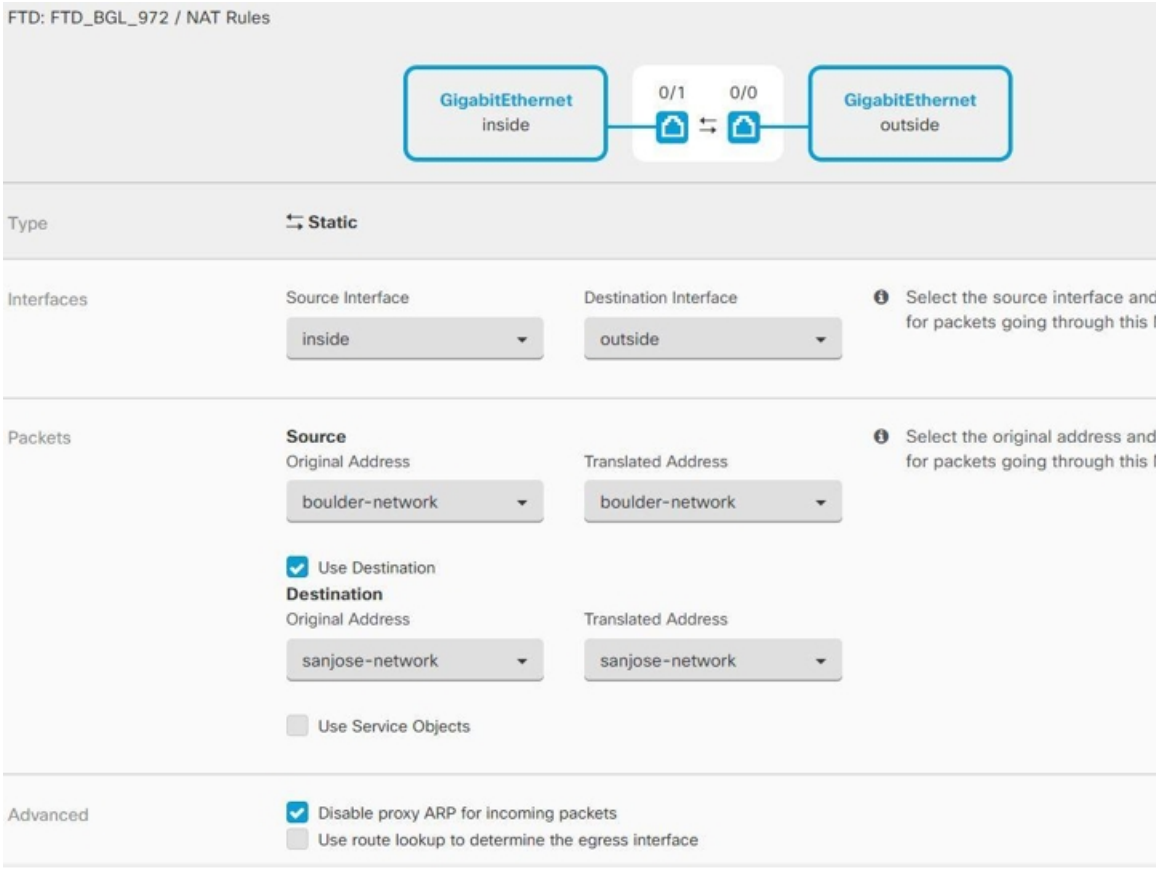
b. In the left pane, click **Security Devices** > **All Devices**.

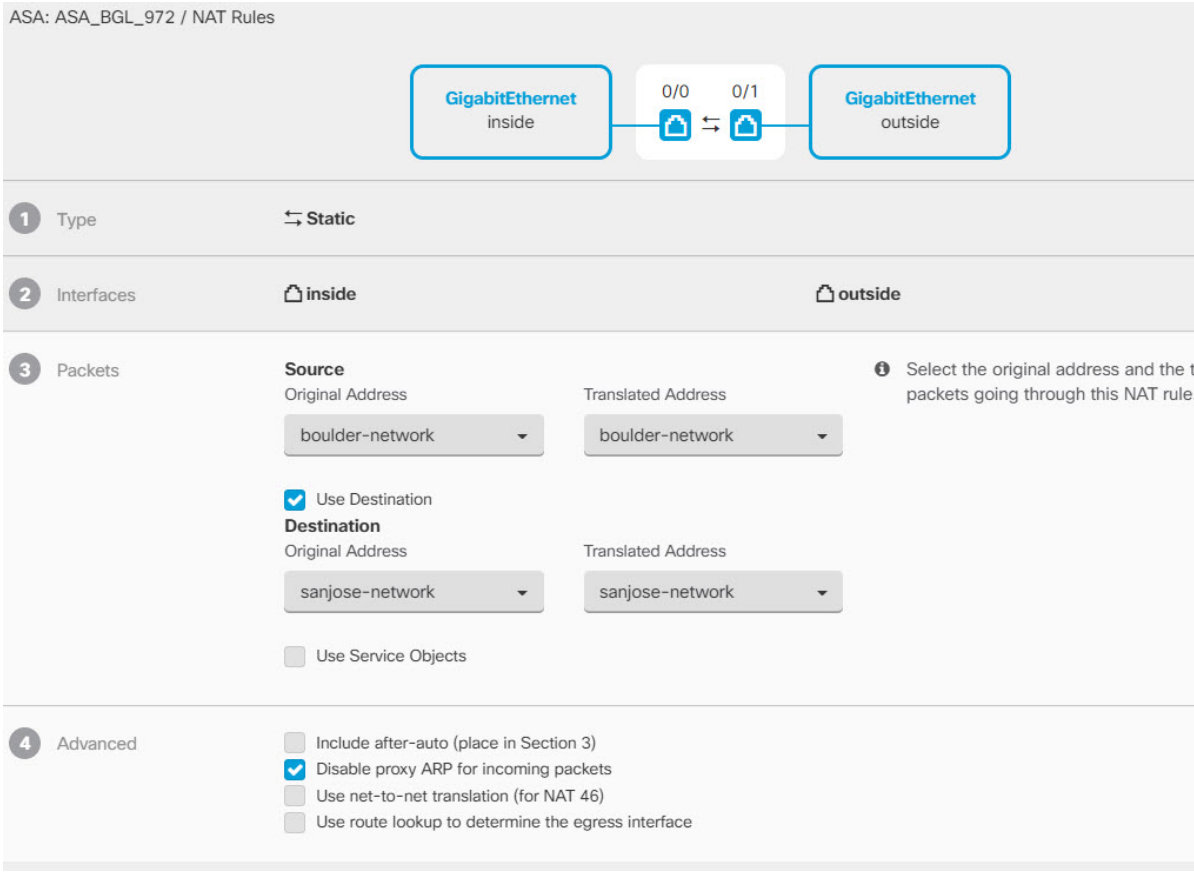
c. Use the filter to find the device for which you want to create the NAT rule.

d. In the Management area of the details panel, click **NAT** NAT.

e. Click  > **Twice NAT**.

- In section 1, select **Static.** Click **Continue**.
- In section 2, select **Source Interface** = **inside** and **Destination Interface** = **outside.** Click **Continue**.
- In section 3, select **Source Original Address** = 'boulder-network' and **Source Translated Address** = 'boulder-network'.
- Select **Use Destination**.
- Select **Destination Original Address** = 'sanjose-network' and **Source Translated Address** = 'sanjose-network'. **Note**: Because you do not want to translate the destination address, you need to configure identity NAT for it by specifying the same address for the original and translated destination addresses. Leave all of the port fields blank. This rule configures identity NAT for both source and destination.


FTD: FTD_BGL_972 / NAT Rules
GigabitEthernet
inside
0/1
0/0
GigabitEthernet
outside
Type
Static
Interfaces
Source Interface
inside
Destination Interface
outside
Select the source interface and
for packets going through this
Packets
Source
Original Address
boulder-network
Translated Address
boulder-network
Select the original address and
for packets going through this
Use Destination
Destination
Original Address
sanjose-network
Translated Address
sanjose-network
Use Service Objects
Advanced
Disable proxy ARP for incoming packets
Use route lookup to determine the egress interface



- Select **Disable proxy ARP for incoming packets**.
- Click **Save**.
- Repeat the process to create equivalent rules for each of the other inside interfaces.

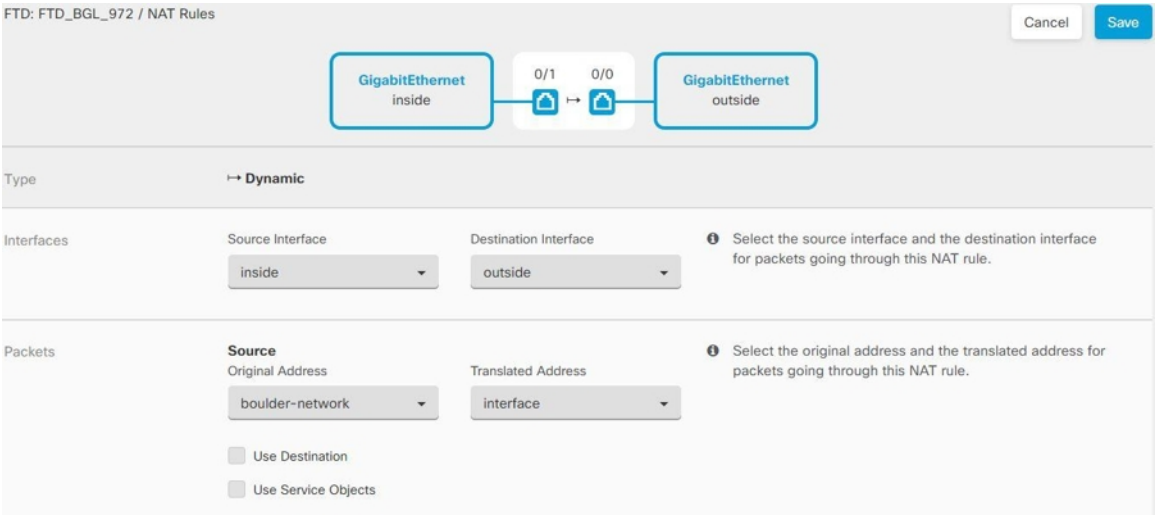
Step 3 Configure manual dynamic interface PAT when going to the Internet for the inside Boulder network on Firewall1 (Boulder). **Note**: There might already be dynamic interface PAT rules for the inside interfaces, covering any IPv4 traffic, as these are created by default during initial configuration. However, the configuration is shown here for completeness. Before completing these steps, check whether a rule already exists that covers the inside interface and network, and skip this step if it does.

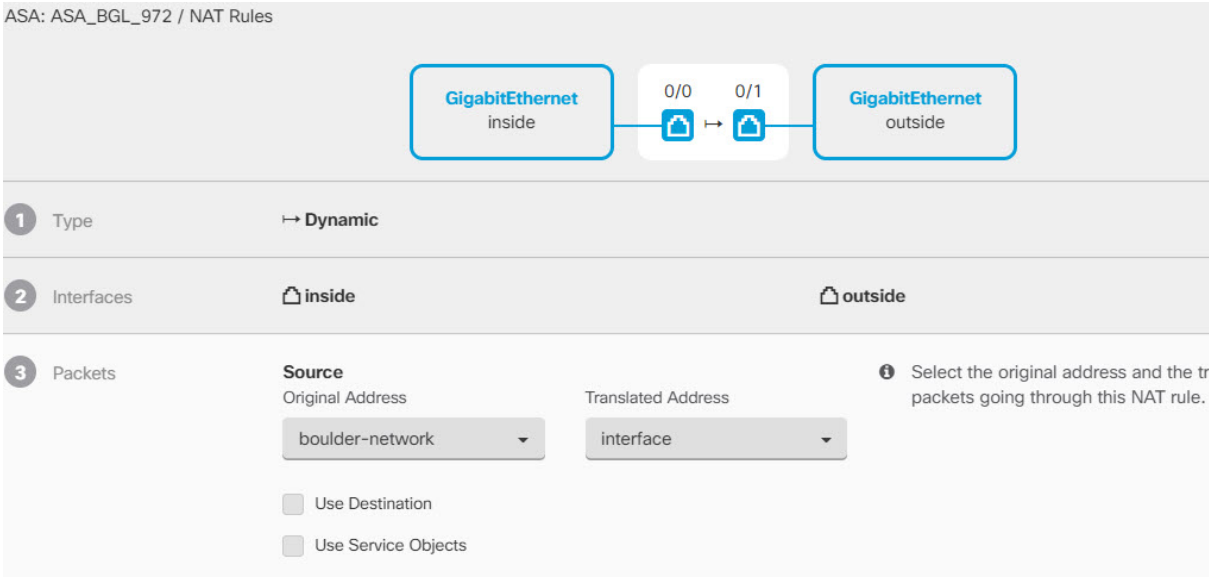
a. Click + > **Twice NAT**.

b. In section 1, select **Dynamic.** Click **Continue**.

c. In section 2, select **Source Interface** = **inside** and **Destination Interface** = **outside.** Click **Continue**.

d. In section 3, select **Source Original Address** = 'boulder-network' and **Source Translated Address** = 'interface'.





e. Click **Save**.

f. Repeat the process to create equivalent rules for each of the other inside interfaces.

Step 4 Deploy configuration changes to Security Cloud Control. For more information, see Deploy Configuration Changes from Security Cloud Control to FTD.

Step 5 Deploy configuration changes to Security Cloud Control. For more information, see Deploy configuration changes made using the Security Cloud Control GUI, on page 599.

Step 6 If you are also managing Firewall2 (San Jose), you can configure similar rules for that device.

- The manual identity NAT rule would be for 'sanjose-network' when the destination is boulder-network. Create new interface objects for the Firewall2 inside and outside networks.

- The manual dynamic interface PAT rule would be for 'sanjose-network' when the destination is "any."

Configure Static and Default Routes for FDM-Managed Devices

Define static routes on an FDM-managed device so it knows where to send packets bound for networks not directly connected to the interfaces on the system.

Consider creating a default route. This is the route for network 0.0.0.0/0. This route defines where to send packets whose egress interface cannot be determined by existing NAT translations, static NAT rules, or other static routes.

You might need other static routes if the default gateway cannot be used to get to all networks. For example, the default route is usually an upstream router on the outside interface. If there are additional inside networks that are not directly connected to the device, and they cannot be accessed through the default gateway, you need static routes for each of those inside networks.

You cannot define static routes for the networks that are directly connected to system interfaces. The system automatically creates these routes.

Site-to-Site VPN Configuration for Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense

You can create site-to-site IPsec connections between a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device and the following devices:

- Firewall Threat Defense
- Secure Firewall ASA
- Multicloud Defense

Create a Site-to-Site VPN Tunnel Between Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense Devices

Use the following procedure to create a site-to-site VPN tunnel between two Firewall Threat Defense devices managed by Cloud-Delivered Firewall Management Center.

Before you begin

There should not be any pending deployments on the Firewall Threat Defense device.

Procedure

Step 1 In the left pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Click the **Create Tunnel** ( ) icon and then click **Site-to-Site VPN**.

Step 3 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.

  We recommend naming your topology to indicate that it is a Firewall Threat Defense device VPN, and its topology type.

- **Peer 1**: Click the **FTD** tab and select a Firewall Threat Defense device.
- **Peer 2**: Click the **FTD** tab and select a Firewall Threat Defense device.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

Step 4 Click **Next**.

Step 5 In the **Peer Details** area, provide the following information:

- **VPN Access Interface**: Select the interface for both peer 1 and peer 2 to establish a connection between them.
- **LAN Interfaces**: Select the interface for both peer 1 and peer 2 that controls the LAN subnet. You can select multiple interfaces
- **Routing**: Click **Add Networks** and select one or more protected networks for peer 1 and peer 2 to establish a site-to-site tunnel between between them.

Step 6 Click **Next**.

Step 7 In the **IKE Settings** area, choose the IKE versions to use during Internet Key Exchange (IKE) negotiations and specify the privacy configurations: For more information on the IKE policies, see Configuring the Global IKE Policy.

Note
IKE policies are global to a device and apply to all VPN tunnels associated with it. Therefore, adding or deleting policies affect all VPN tunnels in which this device is participating.

a. Select either or both options as appropriate.

Note
By default, **IKEV Version 2** is enabled.

b. Click **Add IKEv2 Policies** to select the IKEv2 policies for peer 1 and peer 2.

c. The **Local Pre-Shared Key** and **Remote Pre-Shared Key** for the participating devices are auto-genreated. Preshared keys are secret key strings configured on each peer in the connection. These keys are used by IKE during the authentication phase.

d. Click **IKE Version 1** to enable it.

e. Click **Add IKEv1 Policies** to select the IKEv1 policies for peer 1 and peer 2.

f. The **IPEv1 Pre-Shared Key** is auto-generated.

Step 8 Click **Next**.

Step 9 In the **IPSec Settings** area, specify the IPSec configurations for peer 1 and peer 2. The corresponding IKEV proposals are available depending on the selection that is made in the **IKE Settings** step.

For more information on the IPSec settings, see the About IPSec Proposals.

a. Click **Add IKEv2 IPSec Proposals** and select the IKEv2 proposals you want for peer 1 and peer 2.

b. Choose the **Diffie-Hellman Group for Perfect Forward Secrecy**. For more information, see Encryption and Hash Algorithms Used in VPN, on page 482.

c. Click **Next**.

Step 10 In the **Finish** area, you will find a summary of the configurations you have completed.

Read the configuration and then click **Submit** if you're satisfied.

Step 11

Step 12 Perform the following steps to deploy the configuration to a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device:

a) Choose **Administration** > **Integrations** > **Firewall Management Center**.
b) Ensure the check box corresponding to **Cloud-Delivered FMC** is checked and in the **Actions** pane on the right, click **Deployment**.
c) Select the device participating in the site-to-site VPN configuration and click **Deploy**.
d) Choose **Devices** > **VPN** > **Site To Site**. You can see the same VPN topology that was configured in Security Cloud Control.

Create a Site-to-Site VPN Tunnel Between Cloud-Delivered Firewall Management Center-Managed Firewall Threat Defense and Multicloud Defense

You can create site-to-site IPsec connections between a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense and Multicloud Defense from the Security Cloud Control dashboard that complies with all relevant standards. After the VPN connection is established, the hosts behind the firewall can connect to the hosts behind the gateway through the secure VPN tunnel.

Multicloud Defense currently supports Amazon Web Services (AWS), Azure, Google Cloud Platform (GCP), and Oracle OCI cloud accounts.

Use the following procedure to create a VPN tunnel between a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device and Multicloud Defense from the Security Cloud Control dashboard:

Before you begin

Ensure that the following prerequisites are met:

- The Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device must not have any pending changes.
- The Multicloud Defense must be onboarded to Security Cloud Control. See Connect Cloud Account.
- The Multicloud Defense Gateway must be in the **Active** state.
- The Multicloud Defense Gateway must be VPN enabled. See Enable VPN within the gateway.
- Read the Multicloud Defense Gateway prerequisites and limitations for more information.

Procedure

Step 1 In the navigation pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Click the **Create Tunnel** ( ) icon and then click **Site-to-Site VPN**.

Step 3 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.
- **Peer 1**: Click the **FTD** tab and select a Firewall Threat Defense device.
- **Peer 2**: Click the Multicloud Defense tab and select the gateway you want.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

Step 4 Click **Next**.

Step 5 In the **Peer Details** area, provide the following information:

- **VPN Access Interface**: Select the interface for Firewall Threat Defense to establish a connection with the gateway.
- **Public IP (optional)**: Specify the public IP address of the NAT that maps to the outside interface of the selected Firewall Threat Defense.
- **Routing**: Click **Add Networks** and select one or more protected networks from Firewall Threat Defense to create a site-to-site tunnel between the selected networks and the Multicloud Defense Gateway

Step 6 Click **Next**.

Step 7 In the **Tunnel Details** area, provide the following information:

- **Virtual Tunnel Interface IP**: Specify the addresses for the new **Virtual Tunnel Interfaces** on the peer. You can assign any unused IP address that is currently not used on this device.
- **Autonomous System Number**: Specify the autonomous system number of the network.

Step 8 Click **Next**.

Step 9 In the **IKE Settings** area, click **Add IKEv2** and add the IKE version for the Internet Key Exchange (IKE) negotiations and specify the privacy configurations.

Security Cloud Control generates a default **Local Pre-Shared Key**. This is a secret key string that is configured on the peers. IKE uses this key during the authentication phase. It is used to verify each other when establishing a tunnel between the peers.

Step 10 Click **Next**.

Step 11 In the **IPSec Settings** area, click **Add IKEv2 IPSec Proposals** and select the IKE IPSec configuration. The proposals are available depending on the selection that is made in the **IKE Settings** step. See Configuring IPSec Proposals.

Step 12 Click **Next**.

Step 13 In the **Finish** area, review the configuration and continue further only if you're satisfied with the configuration.

Step 14 Click **Submit**.

The configurations are pushed to the Multicloud Defense Gateway.

Step 15 Perform the following steps to deploy the configuration to a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device:

a) Choose **Administration** > **Integrations** > **Firewall Management Center**.
b) Ensure the check box corresponding to **Cloud-Delivered FMC** is checked and in the **Actions** pane on the right, click **Deployment**.
c) Select the device participating in the site-to-site VPN configuration and click **Deploy**.
d) Choose **Devices** > **VPN** > **Site To Site**. You can see the same VPN topology that was configured in Security Cloud Control.

Create a Site-to-Site VPN Between Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense and Secure Firewall ASA

Before you begin

There should not be any pending deployments on the Firewall Threat Defense device.

Procedure

Step 1 In the navigation pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Click the **Create Tunnel** ( ) icon and then click **Site-to-Site VPN**.

Step 3 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.

  We recommend naming your topology to indicate that it is a Firewall Threat Defense device VPN, and its topology type.

- **Peer 1**: Click the **FTD** tab and select a Firewall Threat Defense device.

- **Peer 2**: Click the **ASA** tab and select a Secure Firewall ASAdevice.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

Step 4 Click **Next**.

Step 5 In the **Peer Details** area, provide the following information:

- **VPN Access Interface**: Select the interface for both peer 1 and peer 2 to establish a connection between them.

- **LAN Interfaces**: Select the interface for both peer 1 and peer 2 that controls the LAN subnet. You can select multiple interfaces

- **Routing**: Click **Add Networks** and select one or more protected networks for peer 1 and peer 2 to establish a site-to-site tunnel between between them.

Step 6 Click **Next**.

Step 7 In the **Tunnel Details** area, provide the following information:

- **Virtual Tunnel Interface IP**: Specify the address for the new **Virtual Tunnel Interfaces** for Secure Firewall ASA. Security Cloud Control provides a sample address for Secure Firewall ASA which you can change if it causes conflict. You can assign any unused IP address that is currently not used on this device.

Step 8 Click **Next**.

Step 9 In the **IKE Settings** area, choose the IKE versions to use during Internet Key Exchange (IKE) negotiations and specify the privacy configurations: For more information on the IKE policies, see Configuring the Global IKE Policy.

Note
IKE policies are global to a device and apply to all VPN tunnels associated with it. Therefore, adding or deleting policies affect all VPN tunnels in which this device is participating.

a. Select either or both options as appropriate.

Note
By default, **IKEV Version 2** is enabled.

b. Click **Add IKEv2 Policies** to select the IKEv2 policies for peer 1 and peer 2.

c. The **Local Pre-Shared Key** and **Remote Pre-Shared Key** for the participating devices are auto-genreated. Preshared keys are secret key strings configured on each peer in the connection. These keys are used by IKE during the authentication phase.

d. Click **IKE Version 1** to enable it.

e. Click **Add IKEv1 Policies** to select the IKEv1 policies for peer 1 and peer 2.

f. The **IPEv1 Pre-Shared Key** is auto-generated.

Step 10 Click **Next**.

Step 11 In the **IPSec Settings** area, specify the IPSec configurations for peer 1 and peer 2. The corresponding IKEV proposals are available depending on the selection that is made in the **IKE Settings** step.

For more information on the IPSec settings, see the About IPSec Proposals.

a. Click **Add IKEv2 IPSec Proposals** and select the IKEv2 proposals you want for peer 1 and peer 2.

b. Choose the **Diffie-Hellman Group for Perfect Forward Secrecy**. For more information, see Deciding Which Diffie-Hellman Modulus Group to Use.

Step 12 Click **Next**.

Step 13 In the **Finish** area, you will find a summary of the configurations you have completed.

Read the configuration and then click **Submit** if you're satisfied.

Step 14 Perform the following steps to deploy the configuration to a Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense device:

a) Choose **Administration** > **Integrations** > **Firewall Management Center**.
b) Ensure the check box corresponding to **Cloud-Delivered FMC** is checked and in the **Actions** pane on the right, click **Deployment**.
c) Select the device participating in the site-to-site VPN configuration and click **Deploy**.
d) Choose **Devices** > **VPN** > **Site To Site**. You can see the same VPN topology that was configured in Security Cloud Control.

Site-to-Site VPN for Secure Firewall ASA

Security Cloud Control supports these aspects of site-to-site VPN functionality on Secure Firewall ASA devices:

- Both IPsec IKEv1 & IKEv2 protocols are supported.
- Automatic or manual pre-shared keys for authentication.
- IPv4 and IPv6. All combinations of inside and outside are supported.
- IPsec IKEv2 site-to-site VPN topologies provide configuration settings to comply with Security Certifications.
- Static and dynamic interfaces.
- Support the static or dynamic IP address for the extranet device as an endpoint.

Configure Site-to-Site VPN Connections with Dynamically Addressed Peers

Security Cloud Control allows you to create a site-to-site VPN connection between peers when one of the peers' VPN interface IP address is not known or when the interface obtains its address from a DHCP server. Any dynamic peer whose preshared key, IKE settings, and IPsec configurations match with another peer can establish a site-to-site VPN connection.

Consider two peers, A and B. The static peer is a device whose IP address of its VPN interface is fixed and a dynamic peer is a device whose IP address of the VPN interface is not known or has a temporary IP address.

The following use cases describe different scenarios for establishing a secure site-to-site VPN connection with dynamically-addressed peers:

- A is a static peer, and B is a dynamic peer or conversely.
- A is a static peer, and B is a dynamic peer with a resolved IP address from the DHCP server or conversely.
- A is a dynamic peer, and B is an extranet device with a static or dynamic IP address.
- A is a dynamic peer with a resolved IP address from the DHCP server, and B is an Extranet device with a static or dynamic IP address.

Note If the IP address of the interface is changed by using a local manager like Adaptive Security Device Manager (ASDM), the **Configuration Status** of that peer in Security Cloud Control shows "Conflict Detected". When you resolve this out-of-band change, the **Configuration Status** of the other peer changes to the "Not Synced" state. You must deploy the Security Cloud Control configuration to the device which is in "Not Synced" state.

Typically, the dynamic peer must be the one that initiates the connection as the other peer would not know the IP address of the dynamic peer. When the remote peer attempts to establish the connection, the other peer validates the connection using the preshared key, IKE settings, and IPsec configurations.

Because the VPN connection is established only after the remote peer initiates the connection, any outbound traffic that matches access control rules that allow traffic in the VPN tunnel will be dropped until that connection is established. This ensures that data does not leave your network without the appropriate encryption and VPN protection.

Note A site-to-site VPN connection cannot be configured in the following scenario:

If a device has more than one dynamic peer connection.

- Consider three devices A, B, and C.
- Configure site-to-site VPN connection between A (static peer) and B (dynamic peer).
- Configure site-to-site VPN connection between A and C (dynamic peer) by creating an Extranet device. Assign the static VPN interface IP address of A to the Extranet device and establish a connection with C.

Secure Firewall ASA Site-to-Site VPN Guidelines and Limitations

- Security Cloud Control does not support a crypto-acl to design the interesting traffic for S2S VPN. It only supports protected networks.
- Whenever IKE ports 500/4500 are in use or when there are some PAT translations that are active, the site-to-site VPN cannot be configured on the same ports as it fails to start the service on those ports.
- Transport mode is not supported only tunnel mode. IPsec tunnel mode encrypts the entire original IP datagram which becomes the payload in a new IP packet. Use tunnel mode when the firewall is protecting traffic to and from hosts positioned behind a firewall. Tunnel mode is the normal way regular IPsec is implemented between two firewalls (or other security gateways) that are connected over an untrusted network, such as the Internet.
- For this release, only PTP topology is supported, containing one or more VPN tunnels. Point-to-point (PTP) deployments establish a VPN tunnel between two endpoints.

Guidelines for Virtual Tunnel Interfaces

- VTIs are only configurable in IPsec mode. To terminate GRE tunnels on an Secure Firewall ASA is unsupported.
- You can use dynamic or static routes for traffic using the tunnel interface.

- The MTU for VTIs is automatically set, according to the underlying physical interface. However, if you change the physical interface MTU after the VTI is enabled, you must disable and reenable the VTI to use the new MTU setting.
- If Network Address Translation has to be applied, the IKE and ESP packets will be encapsulated in the UDP header.
- IKE and IPsec security associations will be re-keyed continuously regardless of data traffic in the tunnel. This ensures that VTI tunnels are always up.
- Tunnel group name must match what the peer will send as its IKEv1 or IKEv2 identity.
- For IKEv1 in LAN-to-LAN tunnel groups, you can use names which are not IP addresses, if the tunnel authentication method is digital certificates and/or the peer is configured to use aggressive mode.
- VTI and crypto map configurations can co-exist on the same physical interface, provided the peer address configured in the crypto map and the tunnel destination for the VTI are different.
- By default, all traffic through VTI is encrypted.
- By default, the security level for VTI interfaces is 0.
- Access list can be applied on a VTI interface to control traffic through VTI.
- Only BGP is supported over VTI.
- If Secure Firewall ASA is terminating IOS IKEv2 VTI clients, disable the config-exchange request on IOS, because Secure Firewall ASA cannot retrieve the mode-CFG attributes for this L2L session initiated by an IOS VTI client.
- IPv6 is not supported.

Create a Site-to-Site VPN Tunnel Between Secure Firewall ASA

Use the following procedure to create a site-to-site VPN tunnel between two ASAs or an ASA with an Extranet device:

Procedure

Step 1 In the left pane, click **Secure Connections** > **Site to Site VPN** > **ASA & FDM**.

Step 2 Click the **Create Tunnel** () icon and then click **Site-to-Site VPN**.

Step 3

Step 4 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.
- **Peer 1**: Click the **ASA** tab and select a Secure Firewall ASA device.
- **Peer 2**: Click the **ASA** tab and select a Secure Firewall ASAdevice.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

Step 5 Click **Next**.

Step 6 In the **Peer Details** area, provide the following information:

- Select one of the options to create a new **Policy Based** or **Route Based** site-to-site VPN.
- **VPN Access Interface**: Select the interface for both peer 1 and peer 2 to establish a connection between them.
- (Applicable to Route Based) **LAN Interfaces**: Select the interface for both peer 1 and peer 2 that controls the LAN subnet. You can select multiple interfaces
- **Routing**: Click **Add Networks** and select one or more protected networks for peer 1 and peer 2 to establish a site-to-site tunnel between between them.
- (Applicable to Policy Based) **NAT Exempt**: Select to exempt the VPN traffic from NAT policies on the local VPN access interface. It must be configured manually for individual peers. If you do not want NAT rules to apply to the local network, select the interface that hosts the local network. This option works only if the local network resides behind a single routed interface (not a bridge group member). If the local network is behind more than one routed interface or one or more bridge group members, you must manually create the NAT exempt rules. For information on manually creating the required rules, see Exempt ASA Site-to-Site VPN Traffic from NAT.

Step 7 Click **Next**.

Step 8 (Applicable to Route Based) In the **Tunnel Details**, the **VTI Address** fields are automatically filled once the peer devices are configured in the previous step. If necessary, you can manually enter an IP address that will be used as the new VTI.

Step 9 In the **IKE Settings** area, choose the IKE versions to use during Internet Key Exchange (IKE) negotiations and specify the privacy configurations: For more information on the IKE policies, see Global IKE policies, on page 77.

Note
IKE policies are global to a device and apply to all VPN tunnels associated with it. Therefore, adding or deleting policies affect all VPN tunnels in which this device is participating.

a. Select either or both options as appropriate.

Note
By default, **IKEV Version 2** is enabled.

b. Click **Add IKEv2 Policies** to select the IKEv2 policies for peer 1 and peer 2.

c. The **Local Pre-Shared Key** and **Remote Pre-Shared Key** for the participating devices are auto-genreated. Preshared keys are secret key strings configured on each peer in the connection. These keys are used by IKE during the authentication phase.

d. Click **IKE Version 1** to enable it.

e. Click **Add IKEv1 Policies** to select the IKEv1 policies for peer 1 and peer 2.

f. The **IPEv1 Pre-Shared Key** is auto-generated.

Step 10 Click **Next**.

Step 11 In the **IPSec Settings** area, specify the IPSec configurations for peer 1 and peer 2. The corresponding IKEV proposals are available depending on the selection that is made in the **IKE Settings** step.

For more information on the IPSec settings, see the Global IKE policies, on page 77.

a. Click **Add IKEv2 IPSec Proposals** and select the IKEv2 proposals you want for peer 1 and peer 2.

b. Choose the **Diffie-Hellman Group for Perfect Forward Secrecy**. For more information, see Encryption and Hash Algorithms Used in VPN, on page 482.

Step 12 In the **Finish** area, review the configuration and continue further only if you're satisfied with the configuration.

By default, the **Deploy changes to ASA immediately** check box is checked to deploy the configurations immediately to the ASA device after clicking **Submit**.

If you want to review and deploy the configurations manually later, then uncheck this check box.

You are directed to the VPN Tunnels page that shows the newly configured site-to-site VPN tunnel. The changes are staged and must be deployed manually. A routing policy is created to route the VTI traffic automatically between the devices over the VTI tunnel. To see this policy, select the device from the **Security Devices** page and choose **Configuration** > **Diff**.

Create a Site-to-Site VPN Between ASA and Multicloud Defense Gateway

You can create site-to-site IPsec connections between an ASA and a Multicloud Defense Gateway that complies with all relevant standards. After the VPN connection is established, the hosts behind the firewall can connect to the hosts behind the gateway through the secure VPN tunnel.

Multicloud Defense currently supports Amazon Web Services (AWS), Azure, Google Cloud Platform (GCP), and Oracle OCI cloud accounts.

Use the following procedure to create a VPN tunnel between an ASA device that is managed by Security Cloud Control and Multicloud Defense Gateway from the Security Cloud Control dashboard:

Before you begin

Ensure that the following prerequisites are met:

- The ASA device must not have any pending changes.
- Create a BGP profile in the ASA console prior to creating a VPN tunnel. See Configure ASA Border Gateway Protocol for more information.
- The Multicloud Defense Gateway must be in the **Active** state.
- The Multicloud Defense Gateway must be VPN enabled. See Enable VPN within the gateway.
- Read the ASA site-to-site VPN limitations and guidelines for more information.
- Read the Multicloud Defense Gateway prerequisites and limitations for more information.

Procedure

Step 1 In the left pane, choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 In the left pane, choose **VPN** > **Site-to-Site VPN**.

Step 3 Click the **Create Tunnel** ( ) icon and then click **Site-to-Site VPN**.

Step 4 In the **Peer Selection** area, provide the following information:

- **Configuration Name**: Enter a unique topology name.
- **Peer 1**: Click the **ASA** tab and select a Secure Firewall ASA device.
- **Peer 2**: Click the **Multicloud Defense** tab and select a multicloud gateway.

  If you choose an extranet device, select **Static** and specify an IP address or select **Dynamic** for extranet devices with DHCP assigned IP. The **IP Address** displays the IP address for static interface or **DHCP Assigned** for the dynamic interface.

Step 5 Click **Next**.

Step 6 In the **Peer Details** area, provide the following information:

- **VPN Access Interface**: Select the interface for Secure Firewall ASA to establish a connection with Multicloud Defense Gateway.
- **LAN Interfaces**: Select the interface for Secure Firewall ASA that controls the LAN subnet. You can select multiple interfaces
- **Public IP (optional)**: Specify the public IP address of the NAT that maps to the outside interface of the selected Secure Firewall ASA.
- **Routing**: Click **Add Networks** and select one or more protected networks for Secure Firewall ASA to establish a site-to-site tunnel with Multicloud Defense Gateway.

Step 7 Click **Next**.

Step 8 In the **Tunnel Details** area, provide the following information:

- **Virtual Tunnel Interface IP**: Specify the addresses for the new **Virtual Tunnel Interfaces** on the peers. Security Cloud Control provides a sample address for Secure Firewall ASA which you can change if it causes conflict. You can assign any unused IP address that is currently not used on this device.
- **Autonomous System Number** (Peer 1): If the Secure Firewall ASA device does not have an autonomous system number configured, Security Cloud Control will suggest one for the device, which can be modified. If the device already has an autonomous system number configured, the current value will be displayed and cannot be modified.
- **Autonomous System Number** (Peer 2): If a BGP profile is assigned to the Multicloud Defense Gateway, the autonomous number associated with the profile is displayed, which cannot be modified. See Add a Multicloud Defense Gateway.

Step 9 Click **Next**.

Step 10 In the **IKE Settings** area, Security Cloud Control generates a default **Local Pre-Shared Key**. This is a secret key string that is configured on the peers. IKE uses this key during the authentication phase. It is used to verify each other when establishing a tunnel between the peers.

Step 11 In the **Finish** area, review the configuration and continue further only if you're satisfied with the configuration.

By default, the **Deploy changes to ASA immediately** check box is checked to deploy the configurations immediately to the ASA device after clicking **Submit**.

If you want to review and deploy the configurations manually later, then uncheck this check box.

Step 12 Click **Submit**.

The configurations are pushed to the Multicloud Defense Gateway.

The VPN page in Security Cloud Control shows the site-to-site tunnel created between the peers. You will be able to see the corresponding tunnel in the Multicloud Defense Gateway portal.

Exempt Site-to-Site VPN Traffic from NAT

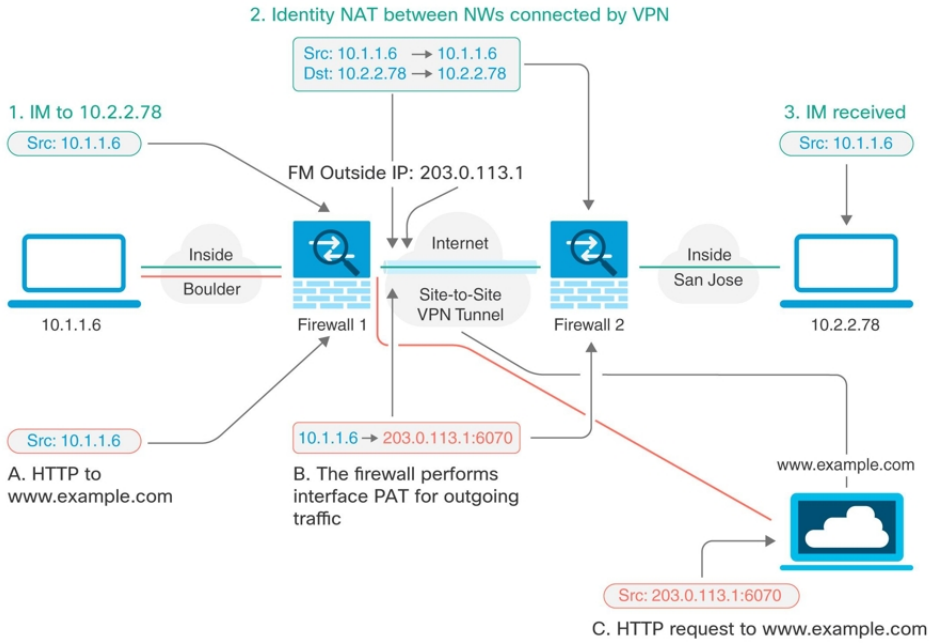
When you have a site-to-site VPN connection defined on an interface, and you also have NAT rules for that interface, you can optionally exempt the traffic on the VPN from the NAT rules. You might want to do this if the remote end of the VPN connection can handle your internal addresses.

When you create the VPN connection, you can select the **NAT Exempt** option to create the rules automatically. However, this works only if your local protected network is connected through a single routed interface (not a bridge group member). If instead, the local networks in the connection reside behind two or more routed interfaces or one or more bridge group members, you need to configure the NAT exempt rules manually.

To exempt VPN traffic from NAT rules, you create an identity manual NAT rule for the local traffic when the destination is the remote network. Then, apply NAT to the traffic when the destination is anything else (for example, the Internet). If you have more than one interface for the local network, create rules for each interface. Also, consider the following suggestions:

- If there is more than one local network in the connection, create a network object group to hold the objects that define the networks.
- If you are including both IPv4 and IPv6 networks in the VPN, create separate identity NAT rules for each.

Consider the following example, which shows a site-to-site tunnel connecting the Boulder and San Jose offices. For traffic that you want to go to the Internet (for example from 10.1.1.6 in Boulder to www.example.com), you need a public IP address provided by NAT to access the Internet. The below example uses interface Port Address Translation (PAT) rules. However, for traffic that you want to go over the VPN tunnel (for example from 10.1.1.6 in Boulder to 10.2.2.78 in San Jose), you do not want to perform NAT; you need to exempt that traffic by creating an identity NAT rule. Identity NAT translates an address to the same address.



The following example explains the configuration for Firewall1 (Boulder). The example assumes that the inside interface is a bridge group, so you need to write the rules for each member interface. The process is the same if you have a single or multiple routed inside interfaces.

Note This example assumes IPv4 only. If the VPN also includes IPv6 networks, create parallel rules for IPv6. Note that you cannot implement IPv6 interface PAT, so you need to create a host object with a unique IPv6 address to use for PAT.

Procedure

Step 1 Create objects to define the various networks.

a. In the left pane, click **Objects**.

b. In the left pane, click **Objects**.

c. Click the blue plus button to create an object.

d. Click **FTD** > **Network**.

e. Click **ASA** > **Network**.

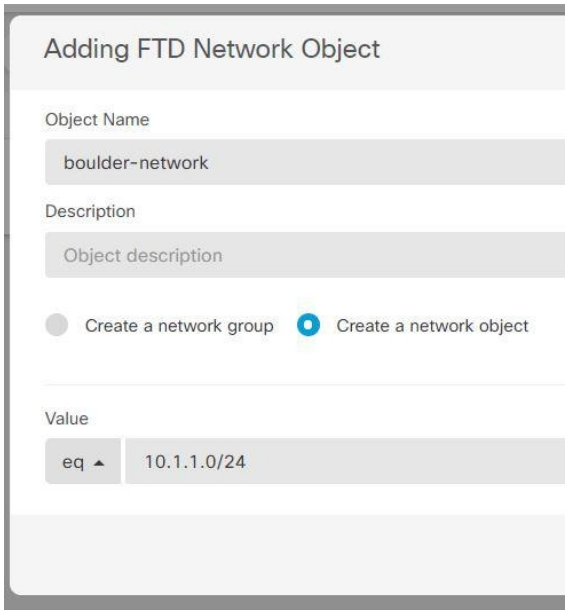
f. Identify the Boulder inside network.

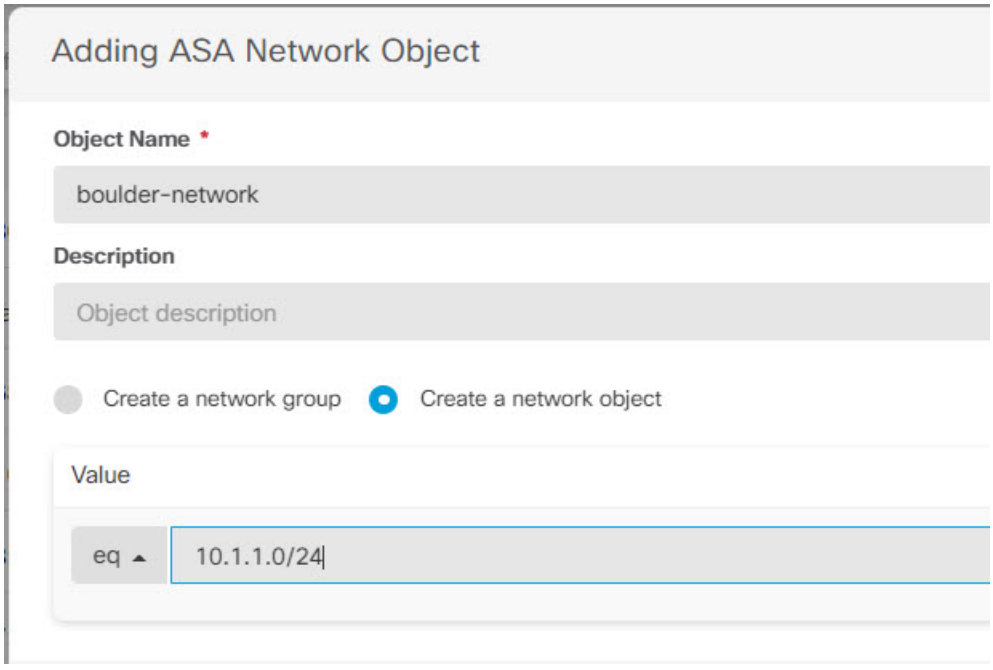
g. Enter an object name (for example, boulder-network).

h. Select **Create a network object**.

i. In the Value section:

- Select **eq** and enter a single IP address or a subnet address expressed in CIDR notation.
- Select **range** and enter an IP address range. For example, enter the network address as 10.1.1.0/24.





j. Click **Add**.

k. Click the blue plus button  to create an object.

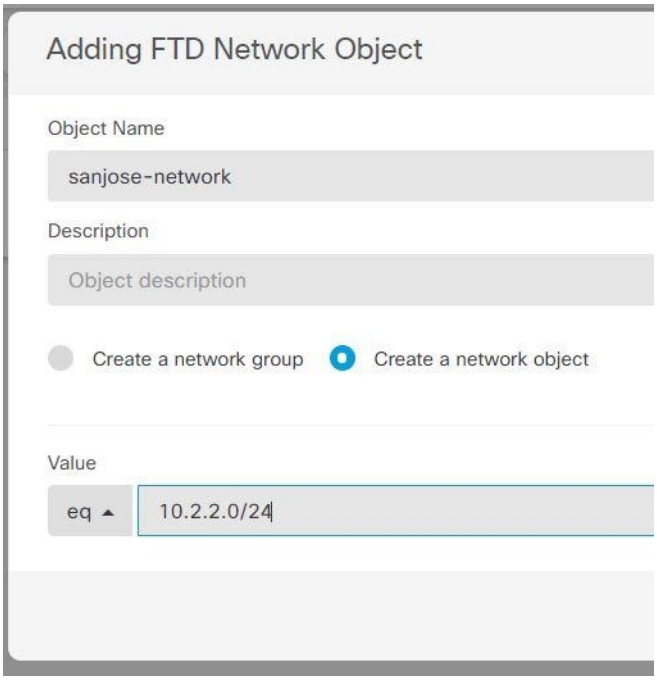
l. Define the inside San Jose network.

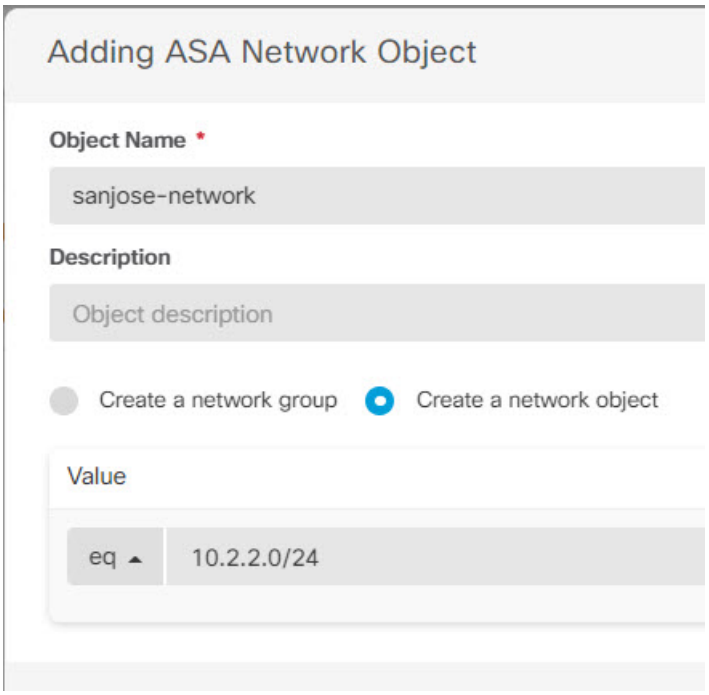
m. Enter the object name (for example, san-jose).

n. Select **Create a network object**.

o. In the Value section:

- Select **eq** and enter a single IP address or a subnet address expressed in CIDR notation.
- Select **range** and enter an IP address range. For example, enter the network address as 10.1.1.0/24.





p. Click **Add**.

Step 2 Configure manual identity NAT for the Boulder network when going over the VPN to San Jose on Firewall1 (Boulder).

a. In the left pane, click **Inventory**.

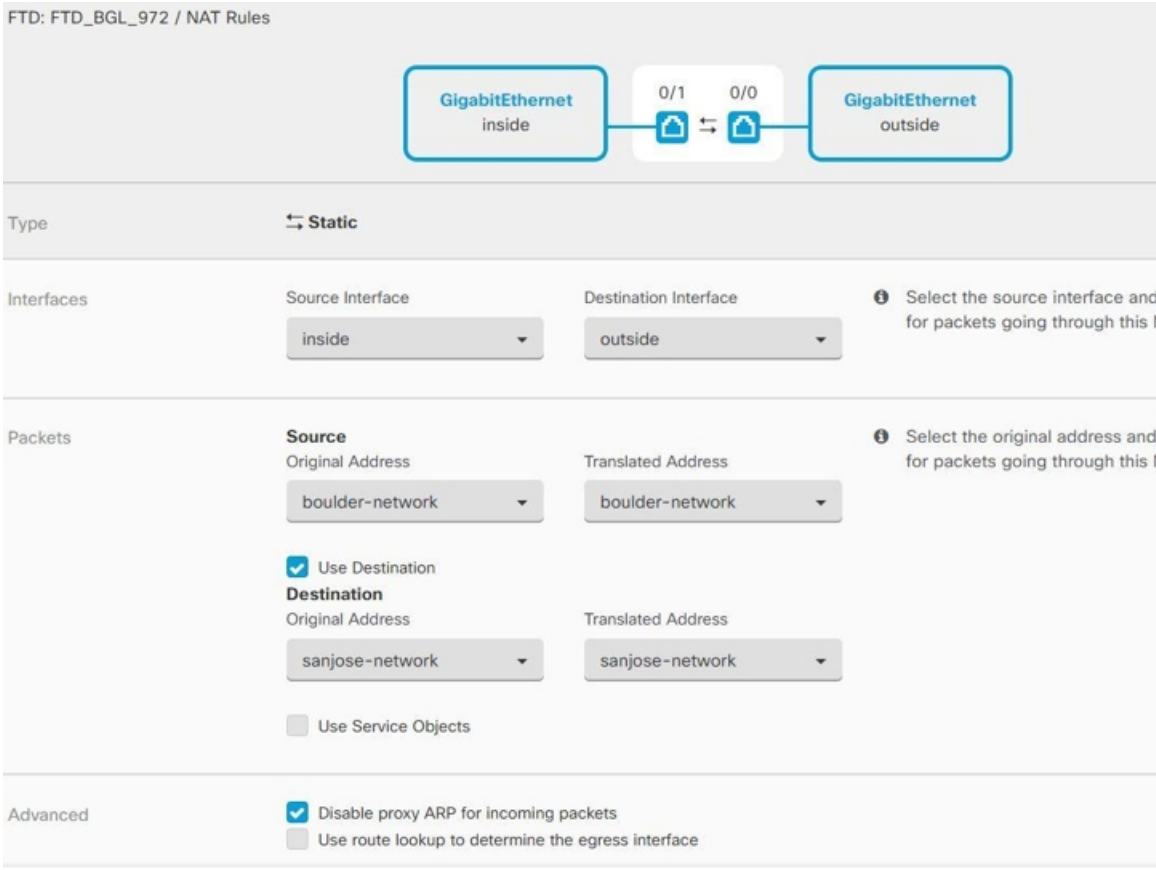
b. In the left pane, click **Security Devices** > **All Devices**.

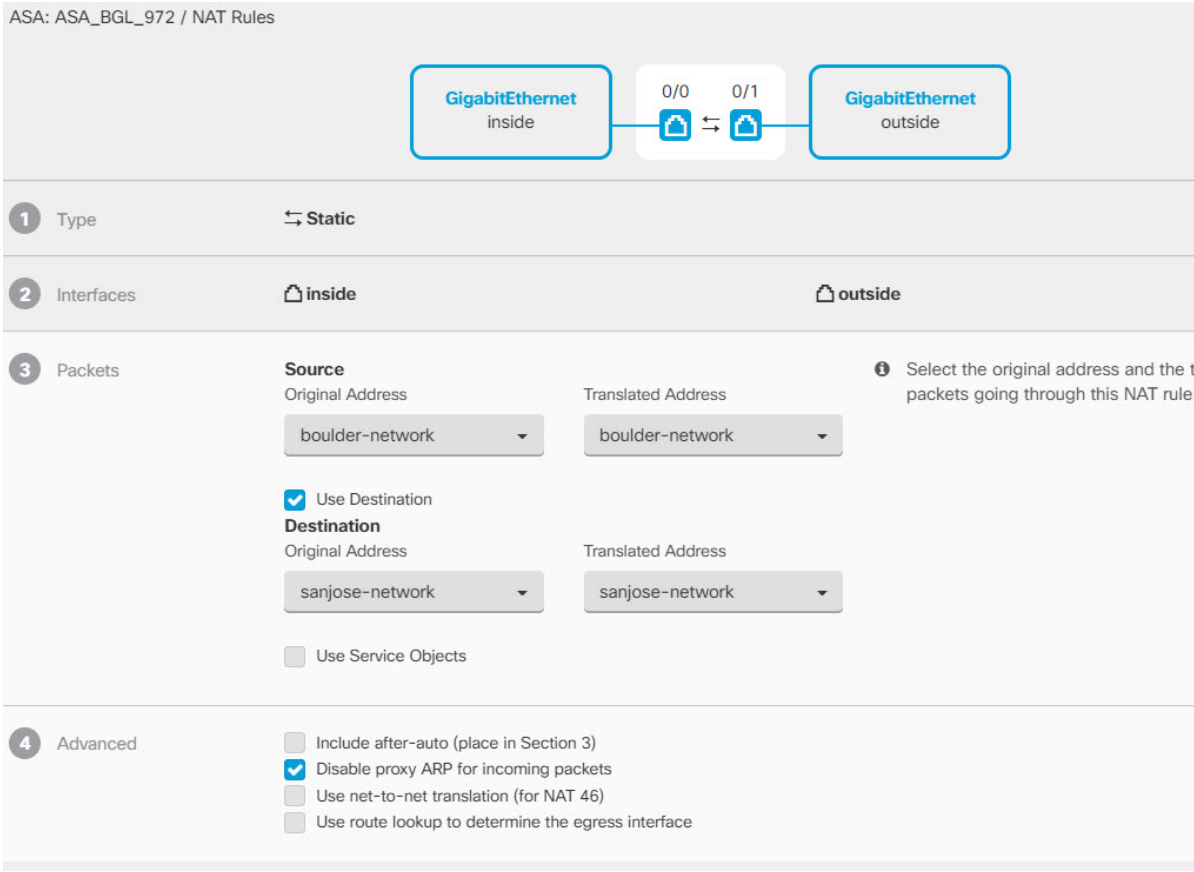
c. Use the filter to find the device for which you want to create the NAT rule.

d. In the Management area of the details panel, click **NAT** NAT.

e. Click  > **Twice NAT**.

- In section 1, select **Static.** Click **Continue**.
- In section 2, select **Source Interface** = **inside** and **Destination Interface** = **outside.** Click **Continue**.
- In section 3, select **Source Original Address** = 'boulder-network' and **Source Translated Address** = 'boulder-network'.
- Select **Use Destination**.
- Select **Destination Original Address** = 'sanjose-network' and **Source Translated Address** = 'sanjose-network'. **Note**: Because you do not want to translate the destination address, you need to configure identity NAT for it by specifying the same address for the original and translated destination addresses. Leave all of the port fields blank. This rule configures identity NAT for both source and destination.


FTD: FTD_BGL_972 / NAT Rules
GigabitEthernet
inside
0/1
0/0
GigabitEthernet
outside
Type
Static
Interfaces
Source Interface
inside
Destination Interface
outside
Select the source interface and
for packets going through this
Packets
Source
Original Address
boulder-network
Translated Address
boulder-network
Select the original address and
for packets going through this
Use Destination
Destination
Original Address
sanjose-network
Translated Address
sanjose-network
Use Service Objects
Advanced
Disable proxy ARP for incoming packets
Use route lookup to determine the egress interface



- Select **Disable proxy ARP for incoming packets**.
- Click **Save**.
- Repeat the process to create equivalent rules for each of the other inside interfaces.

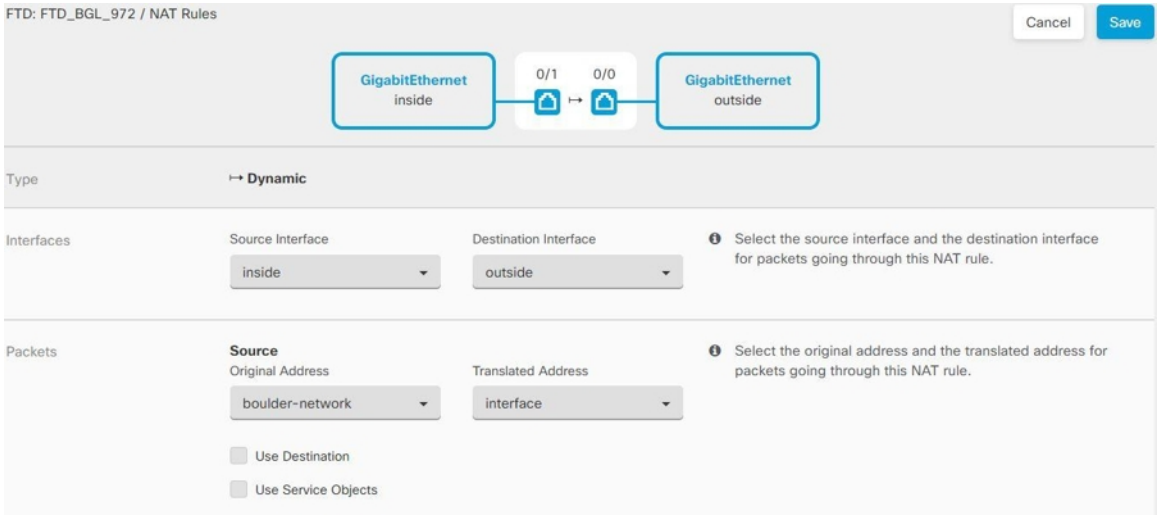
Step 3 Configure manual dynamic interface PAT when going to the Internet for the inside Boulder network on Firewall1 (Boulder). **Note**: There might already be dynamic interface PAT rules for the inside interfaces, covering any IPv4 traffic, as these are created by default during initial configuration. However, the configuration is shown here for completeness. Before completing these steps, check whether a rule already exists that covers the inside interface and network, and skip this step if it does.

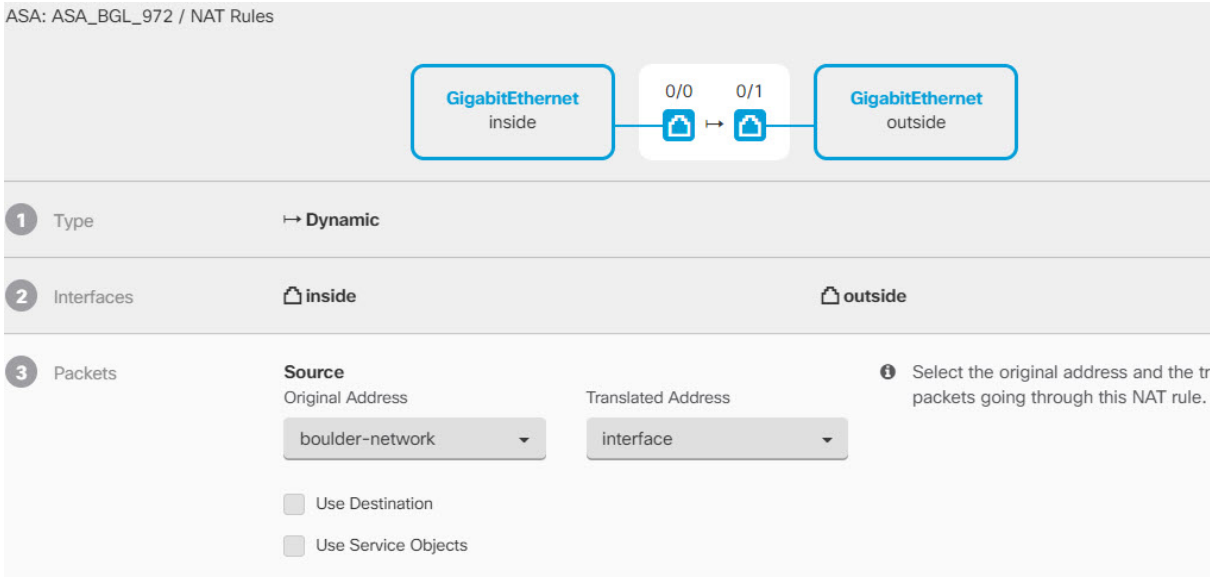
a. Click + > **Twice NAT**.

b. In section 1, select **Dynamic.** Click **Continue**.

c. In section 2, select **Source Interface** = **inside** and **Destination Interface** = **outside.** Click **Continue**.

d. In section 3, select **Source Original Address** = 'boulder-network' and **Source Translated Address** = 'interface'.





e. Click **Save**.

f. Repeat the process to create equivalent rules for each of the other inside interfaces.

Step 4 Deploy configuration changes to Security Cloud Control. For more information, see Deploy Configuration Changes from Security Cloud Control to FTD.

Step 5 Deploy configuration changes to Security Cloud Control. For more information, see Deploy configuration changes made using the Security Cloud Control GUI, on page 599.

Step 6 If you are also managing Firewall2 (San Jose), you can configure similar rules for that device.

- The manual identity NAT rule would be for 'sanjose-network' when the destination is boulder-network. Create new interface objects for the Firewall2 inside and outside networks.

- The manual dynamic interface PAT rule would be for 'sanjose-network' when the destination is "any."

Monitor ASA Site-to-Site Virtual Private Networks

Security Cloud Control allows you to monitor already existing site-to-site VPN configurations on onboarded ASA devices. It doesn't allow you to modify or delete the site-to-site configuration.

Security Cloud Control allows you to monitor, modify, and delete existing or newly created site-to-site VPN configurations on onboarded FDM-managed devices.

Check Site-to-Site VPN Tunnel Connectivity

Use the **Check Connectivity** button to trigger a real-time connectivity check against the tunnel to identify whether the tunnel is currently active or idle. Unless you click the on-demand connectivity check button, a check across all tunnels, available across all onboarded devices, occurs once an hour.

Note

- Security Cloud Control runs this connectivity check command on the ASAFTD to determine if a tunnel is active or idle:

  ```
  show vpn-sessiondb l2l sort ipaddress
  ```

- Model ASA device(s) tunnels will always show as **Idle**.

To check tunnel connectivity from the VPN page:

Procedure

Step 1 In the left pane, choose VPN > ASA/FDM Site-to-Site VPN**Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Search and filter the list of tunnels for your site-to-site VPN tunnel and select it.

Step 3 In the Actions pane at the right, click **Check Connectivity**.

Site-To-Site VPN Dashboard

Security Cloud Control provides a consolidated information about site-to-site VPN connections created in the tenant.

1. In the left pane, click **Secure Connections** > **Site to Site VPN**. The **Site-to-Site VPN** provides the information in the following widgets:

   - **Sessions & Insights**: Displays a bar graph representing Active VPN Tunnels and Idle VPN Tunnels, each in appropriate colors.
   - **Issues**: Shows the total number of tunnels detected with issues.

- **Pending Deploy**: Shows the total number of tunnels with pending deployment.

By clicking on a value in the pie chart or any link in the widget, the site-to-site VPN listing page is displayed with a filter based on the selected value. For instance, in the **VPN Tunnel Status** widget, on clicking the **Active VPN Tunnels**, you will be directed to the site-to-site VPN listing page with the **Active** status filter applied, showing only the active tunnels.

Identify VPN Issues

Security Cloud Control can identify VPN issues on ASAFTD. (This feature is not yet available for AWS VPC site-to-site VPN tunnels.) This article describes:

- Find VPN Tunnels with Missing Peers
- Find VPN Peers with Encryption Key Issues
- Find Incomplete or Misconfigured Access Lists Defined for a Tunnel
- Find Issues in Tunnel Configuration

Resolve Tunnel Configuration Issues, on page 523

Find VPN Tunnels with Missing Peers

The "Missing IP Peer" condition is more likely to occur on ASA devices than FDM-managed devices.

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select **Table View**.

Step 3 Open the Filter panel by clicking the filter icon .

Step 4 Check **Detected Issues**.

Step 5 Select each device reporting an issue and look in the Peers pane at the right. One peer name will be listed. Security Cloud Control reports the other peer name as, "[Missing peer IP.]"

Find VPN Peers with Encryption Key Issues

Use this approach to locate VPN Peers with encryption key issues such as:

- IKEv1 or IKEv2 keys are invalid, missing, or mismatched
- Obsolete or low encryption tunnels

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select **Table View**.

Step 3 Open the Filter panel by clicking the filter icon  .

Step 4 Select each device reporting an issue ⚠ and look in the Peers pane at the right. The peer information will show you both peers.

Step 5 Click on **View Peers** for one of the devices.

Step 6 Double-click the device reporting the issue in the Diagram View.

Step 7 Click **Key Exchange** in the Tunnel Details panel at the bottom. You will be able to view both devices and diagnose the key issue from that point.

Find Incomplete or Misconfigured Access Lists Defined for a Tunnel

The "incomplete or misconfigured access-list" condition could only occur on ASA devices.

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select **Table View**.

Step 3 Open the Filter panel by clicking the filter icon  .

Step 4 Select each device reporting an issue ⚠ and look in the Peers pane at the right. The peer information shows you both peers.

Step 5 Click on **View Peers** for one of the devices.

Step 6 Double-click the device reporting the issue in the Diagram View.

Step 7 Click **Tunnel Details** in the Tunnel Details panel at the bottom. You will see the message, "Network Policy: Incomplete"

Find Issues in Tunnel Configuration

The tunnel configuration error can occur in the following scenarios:

- When the IP address of a site-to-site VPN interface changes, the "Peer IP Address Value has changed".
- When the IKE value of a VPN tunnel doesn't match the other VPN tunnel, the "IKE value Mismatch" message appears.

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select **Table View**.

Step 3 Open the Filter panel by clicking the filter icon .

Step 4 In the **Tunnel Issues**, click **Detected Issues** to view the VPN configuration reporting errors. You can view the configuration reporting issues .

Step 5 Select the VPN configuration reporting issues.

Step 6 In the **Peers** pane on the right, the icon appears for the peer having the issue. Hover over the icon to see the issue and resolution.

Next Step: Resolve Tunnel Configuration Issues.

Resolve Tunnel Configuration Issues

This procedure attempts to resolve these tunnel configuration issues:

- When the IP address of a site-to-site VPN interface changes, the "Peer IP Address Value has changed".
- When the IKE value of a VPN tunnel doesn't match the other VPN tunnel, the "IKE value Mismatch" message appears.

See Find Issues in Tunnel Configuration for more information.

Procedure

Step 1 In the left pane, click **InventorySecurity Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab and select the device associated with the VPN configuration reporting an issue.

Step 4 Accept the device changes.

Step 5 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPN** to open the VPN page.

Step 6 Select the VPN configuration reporting this issue.

Step 7 In the **Actions** pane, click the **Edit** icon.

Step 8 Click **Next** in each step until you click the **Finish** button in step 4.

Step 9 Preview and deploy configuration changes for all devices, on page 597.

Search and filter site-to-site VPN tunnels

Use the filter sidebar in combination with the search field to focus your search of VPN tunnels presented in the VPN tunnel diagram.

Procedure

Step 1 Choose **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 2 Click the filter icon to open the filter pane.

Step 3 Use these filters to refine your search:

- **Filter by Device**: Click **Filter by Device**, select the device type tab, and check the devices you want to find by filtering.
- **Tunnel Issues**: Indicates whether issues have been detected on either side of the tunnel. For example, a device may be missing an associated interface, peer IP address, access list, or may have IKEv1 proposal mismatches. (Detecting tunnel issues is not yet available for AWS VPC VPN tunnels.)
- **Devices/Services**: Filters by type of device.
- **Status**: Indicates tunnel status, which can be active or idle.
  - **Active**: An open session exists in which network packets traverse the VPN tunnel, or a successful session was established that has not timed out yet. The "Active" status indicates that the tunnel is operational and relevant.
  - **Idle**: Security Cloud Control is unable to discover an open session for this tunnel. The tunnel may either be not in use or there is an issue with this tunnel.
- **Onboarded**: Devices could be managed by Security Cloud Control or not managed (unmanaged) by Security Cloud Control.
  - **Managed**: Filters by devices that Security Cloud Control manages.
  - **Unmanaged**: Filters by devices that Security Cloud Control does not manage.
- **Device Types**: Indicates whether either side of the tunnel is a live (connected) or model device.

Step 4 You can also search the filtered results by device name or IP address by entering that information in the search bar. The search is case-insensitive.

Onboard an Unmanaged Site-to-Site VPN Peer

Security Cloud Control will discover a site-to-site VPN tunnel when one of the peers is onboarded. If the second peer is not managed by Security Cloud Control, you can filter the list of VPN tunnels to find the unmanaged device and onboard it:

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select **Table View**.

Step 3 Open the filter panel by clicking .

Step 4 Check **Unmanaged**.

Step 5 Select a tunnel from the table from the results.

Step 6 In the **Peers** pane on the right, click **Onboard Device** and follow the instructions on the screen.

View IKE Object Details of Site-To-Site VPN Tunnels

You can view the details of the IKE objects configured on the peers/devices of the selected tunnel. These details appear in a tree structure in a hierarchy based on the priority of the IKE policy object.

Note Extranet devices don't show the IKE Objects details.

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 In the **VPN Tunnels** page, click the name of the VPN tunnel that connects the peers.

Step 3 Under **Relationships** on the right, expand the object that you want to see its details.

View Last Successful Site-to-Site VPN Tunnel Establishment Date

This information typically provides the date and time when the VPN tunnel was last successfully established, ensuring connectivity between the two sites. Accessing this data can help you monitor VPN health and troubleshoot any connectivity issues that might arise.

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 The **VPN Tunnels** page displays all the site-to-site VPN tunnels configured across your managed devices. You can click a tunnel to view more details in the right pane.

Note
Use Search and Filter Site-to-Site VPN Tunnels to find a specific tunnel.

The **Last Active** field shows the date and time the VPN tunnel was successfully established.

View Site-to-Site VPN Tunnel Information

The site-to-site VPN table view is a complete listing of all site-to-site VPN tunnels available across all devices onboarded to Security Cloud Control. A tunnel only exists once in this list. Clicking on a tunnel listed in the table provides an option in the right side bar to navigate directly to a tunnel's peers for further investigation.

In cases where Security Cloud Control does not manage both sides of a tunnel, you can click Onboard Device to open the main onboarding page an onboard the unmanaged peer. In cases where Security Cloud Control manages both side of a tunnel, the Peer 2 column contains the name of the managed device. However, in the case of an AWS VPC, the Peer 2 column contains the IP address of the VPN gateway.

To view site-to-site VPN connections in the table view:

Procedure

Step 1 In the left pane, click **VPN** > **ASA/FDM Site-to-Site VPNSecure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 The **VPN Tunnels** page displays all the site-to-site VPN tunnels configured across your managed devices. You can click on a tunnel to view more details in the right pane.

Note
Use Search and Filter Site-to-Site VPN Tunnels to find a specific tunnel.

Site-to-Site VPN Global View

Procedure

Step 1 In the left pane, click **VPN > ASA/FDM Site-to-Site VPN.**

Step 2 In the left pane, click **Secure Connections** > **Network Connections** > **Site to Site VPN**.

Step 3 Click the **Global view** button.

Step 4 Use Search and Filter Site-to-Site VPN Tunnels to find a specific tunnel, or zoom into the Global View graphic to find the VPN gateway and its peers that you are looking for.

Step 5 Select one of the peers represented in the Global View.

Step 6 Click **View Details**.

Step 7 Click the other end of the VPN tunnel and Security Cloud Control displays Tunnel Details, NAT Information, and Key Exchange information for that connection:

- **Tunnel Details**-Displays the name and connectivity information about the tunnel. Clicking the Refresh icon updates the connectivity information for the tunnels.

- **Tunnel Details specific to AWS connections**-Tunnel details for AWS site-to-site connections are slightly different than for other connections. For each connection from the AWS VPC to your VPN gateway, AWS creates two VPN tunnels. This is for high availability.
  - The name of the tunnel represents the name of the VPC your VPN gateway is connected to. The IP address named in the tunnel is the IP address that your VPN gateway knows as the VPC.
  - If the Security Cloud Control Connectivity status shows **active**, the AWS tunnel state is **Up**. If the Security Cloud Control Connectivity state is **inactive**, the AWS tunnel state is **Down**.
- **NAT Information**-Displays the type of NAT rule being used, original and translated packet information, and provides links to the NAT table to view the NAT rule for that tunnel. (Not yet available for AWS VPC site-to-site VPN.)
- **Key Exchange**-Displays the cryptographic keys in use by the tunnel and key-exchange issues. (Not yet available for AWS VPC site-to-site VPN.)

Site-to-Site VPN Tunnels Pane

The Tunnels pane displays a list of all the tunnels associated with a particular VPN gateway. For site-to-site VPN connections between your VPN gateway and an AWS VPC, the tunnels pane shows all the tunnels from your VPN gateway to the VPC. Since each site-to-site VPN connection between your VPN gateway and an AWS VPC has two tunnels, you will see double the number of tunnels you normally would for other devices.

VPN Gateway Details

Displays the number of peers connected to the VPN gateway and the IP address of the VPN gateway. This is only visible in the VPN Tunnels page.

View Peer

After you select a site-to-site VPN peer pair, the peers pane lists the two devices in the pair and allows you to click **View Peer** for one of the devices. By clicking **View Peer**, you see any other site-to-site peer that device is associated with. This is visible in the Table view and in the Global view.

Delete a Security Cloud Control Firewall Management Site-To-Site VPN Tunnel

Procedure

Step 1 In the left pane, click **Secure Connections** > **Network Connections** > **Site to Site VPN** to open the VPN page.

Step 2 Select the desired site-to-site VPN tunnel that you want to delete.

Step 3 In the **Actions** pane on the right, click **Delete**.

The selected site-to-site VPN tunnel is deleted.

Introduction to Remote Access Virtual Private Network

Remote Access virtual Private Network (RA VPN) capability enables users to connect to your network from a location outside the physical office premises. This means that they can use a computer or a supported iOS/Android device that is connected to the internet and access your network resources securely. This feature is particularly useful for mobile workers who need to connect from their home network or a public Wi-Fi network while ensuring that their data remains safe and protected.

Introduction to Remote Access Virtual Private Network

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Configure Remote Access Virtual Private Network for ASA

The ASA creates a remote access virtual private network (VPN) by creating a secure connection across a TCP/IP network (such as the Internet) that users see as a private connection. It can create single-user-to-LAN connections and LAN-to-LAN connections.

The secure connection is called a tunnel, and the ASA uses tunneling protocols to negotiate security parameters, create and manage tunnels, encapsulate packets, transmit or receive them through the tunnel, and unencapsulate them. The ASA functions as a bidirectional tunnel endpoint: it can receive plain packets, encapsulate them, and send them to the other end of the tunnel where they are unencapsulated and sent to their final destination. It can also receive encapsulated packets, unencapsulate them, and send them to their final destination.

Security Cloud Control provides an intuitive user interface for configuring a new remote access Virtual Private Network. It also allows you to quickly and easily configure remote access VPN connection for multiple Adaptive Security Appliance (ASA) devices onboarded in Security Cloud Control.

Security Cloud Control allows you to configure the remote access VPN configuration on ASA devices from scratch. It also allows you to manage the remote access VPN settings that have already been configured using another ASA management tool, such as the Adaptive Security Defense Manager (ASDM) or Cisco Security Manager (CSM). When you onboard an ASA device that already has remote access VPN settings, Security Cloud Control automatically creates a "Default remote access VPN Configuration" and associates the ASA device with this configuration. This default configuration can contain all the connection profile objects that are defined on the device. If you want to understand the RAVPN attributes that are read into Security Cloud Control, see the Read RA VPN Configuration of an Onboarded ASA Device section. Otherwise, you can start performing steps described in the "End-to-End Remote Access VPN Configuration Process for ASA" section.

End-to-End Remote Access VPN Configuration Process for ASA

This section provides the end-to-end procedure for configuring remote access VPN on an ASA device onboarded to Security Cloud Control.

To enable remote access VPN for your clients, you need to configure several separate items. The following procedure provides the end-to-end process.

Procedure

Step 1 Configure the identity source used for authenticating remote users.

You can use the following sources to authenticate users attempting to connect to your network using remote access VPN. Additionally, you can use client certificates for authentication, either alone or in conjunction with an identity source.

- Local Identity Source (the local user database): As a primary or fallback source. You can define users directly on the device and not use an external server. If you use the local database as a fallback source, ensure that you define the same usernames/passwords as the ones described in the external server. **Note**: You can create user accounts directly on the ASA device only from the Adaptive Security Device Manager (ASDM). See the "Configure Local User Groups" section in the Objects for Access Control" chapter of the Cisco ASA Series Firewall ASDM Configuration Guide, X.Y.

Step 2 Create ASA Remote Access VPN Configuration, on page 541.

Step 3 Configure ASA Remote Access VPN Connection Profile, on page 545.

Step 4 (optional) Exempt Remote Access VPN Traffic from NAT, on page 559.

Step 5 Review and deploy configuration changes to the devices.

Important
If you change the Remote Access VPN configuration by using a local manager like Adaptive Security Device Manager (ASDM), the **Configuration Status** of that device in Security Cloud Control shows "Conflict Detected". See Out-of-Band Changes on an ASA Device. You can Resolve Configuration Conflicts on this ASA.

Once the remote access VPN configuration is downloaded to the ASA devices, the users can connect to your network from a remote location using a computer or other supported iOS or Android device connected to the Internet. You can monitor live AnyConnect remote access VPN sessions from all onboarded ASA remote access VPN head-ends in your tenant.

Identity sources for ASA

Identity sources, such as Microsoft Active Directory (AD) realms and RADIUS Servers, are AAA servers and databases that define user accounts for the people in your organization. You can use this information in a variety of ways, such as providing the user identity associated with an IP address or authenticating remote access VPN connections or access to Security Cloud Control.

Click **Objects**, then click ( )>**Identity Source** to create your sources. You would then use these objects when you configure the services that require an identity source. You can apply appropriate filters to search existing sources and manage them.

Determining the directory base DN

When you configure directory properties, you need to specify the common base distinguished name (DN) for users and groups. The base is defined in your directory server and differs from network to network. You must enter the correct bases for identity policies to work. If the base is wrong, the system cannot determine user or group names, and thus identity-based policies will be inoperable.

Note To get the correct bases, consult the administrator who is responsible for the directory servers.

For an active directory, you can determine the correct bases by logging into the Active Directory server as a domain administrator, and using the **dsquery** command at a command prompt as follows to determine the bases:

User search base

Enter the **dsquery user** command with known username (partial or complete) to determine the base distinguished name. For example, the following command uses the partial name "John*" to return information for all users that start with "John."

C:\Users\Administrator>dsquery user -name "John*"

"CN=John Doe,CN=Users,DC=csc-lab,DC=example,DC=com"

The base DN would be "DC=csc-lab,DC=example,DC=com."

Group search base

Enter the **dsquery group** command with a known group name to determine the base distinguished name. For example, the following command uses the group name Employees to return the distinguished name:

C:\>dsquery group -name "Employees"

"CN=Employees,CN=Users,DC=csc-lab,DC=example,DC=com"

The group base DN would be "DC=csc-lab,DC=example,DC=com."

You can also use the ADSI Edit program to browse the Active Directory structure (**Start** > **Run** > **adsiedit.msc**). In ADSI Edit, right-click any object, such as an organizational unit (OU), group, or user, and choose **Properties** to view the distinguished name. You can then copy the string of DC values as the base.

To verify that you have the correct base:

Procedure

Step 1 Click the Test Connection button in the directory properties to verify connectivity. Resolve any problems, and save the directory properties.

Step 2 Commit changes to the device.

Step 3 Create an access rule, select the **Users** tab, and try to add known user and group names from the directory. You should see auto-complete suggestions as you type for matching users and groups in the realm that contains the directory. If these suggestions appear in a drop-down list, then the system was able to query the directory successfully. If you see no suggestions, and you are certain the string you typed should appear in a user or group name, you need to correct the corresponding search base. See Create or Edit an ASA Active Directory Realm Object for more information.

RADIUS servers and groups

You can use RADIUS servers to authenticate and authorize administration users. When you configure a feature to use RADIUS servers, you select a RADIUS group instead of individual servers. A RADIUS group is a

collection of RADIUS servers that are copies of each other. If a group has more than one server, they form a chain of backup servers to provide redundancy in case one server becomes unavailable. But even if you have only one server, you must create a one-member group to configure RADIUS support for a feature.

You can use this source for the following purposes:

- Remote Access VPN, as an identity source for authentication, and for authorization and accounting. You can use AD in conjunction with a RADIUS server.
- Identity policy, as a passive identity source to collect user identity from remote access VPN logins.

See Create and Edit an Adaptive Security Appliance RADIUS Server Object or Group for more information.

Create an ASA Active Directory realm object

When you create or edit an identity source object such as an AD realm object, Security Cloud Control Firewall Management sends the configuration request to the ASA devices through the SDC. The ASA then communicates with the configured AD realm.

Use the following procedure to create an object:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click **Create Object** ()**RA VPN Objects (ASA & FDM)** > **Identity Source**.

Step 3 Enter an **Object Name** for the object.

Step 4 Select the **Device Type** as **ASA**.

Step 5 In the first part of the wizard, select **Active Directory Realm** as the **Identity Source Type**. Click **Continue**.

Step 6 Configure the basic realm properties.

- **Directory Username, Directory Password** - The distinguished username and password for a user with appropriate rights to the user information you want to retrieve. For Active Directory, the user does not need elevated privileges. You can specify any user in the domain. The username must be fully qualified; for example, Administrator@example.com (not simply Administrator).

  Note
  The system generates ldap-login-dn and ldap-login-password from this information. For example, Administrator@example.com is translated as cn=administrator,cn=users,dc=example,dc=com. Note that cn=users is always part of this translation, so you must configure the user you specify here under the common name “users” folder.

- **Base Distinguished Name** - The directory tree for searching or querying user and group information, that is, the common parent for users and groups. For example, cn=users,dc=example,dc=com.

Step 7 Configure the directory server properties.

- **Hostname/IP Address**—The hostname or IP address of the directory server. If you use an encrypted connection to the server, you must enter the fully-qualified domain name, not the IP address.

- **Port**—The port number used for communications with the server. The default is 389. Use port 636 if you select LDAPS as the encryption method.
- **Encryption**—To use an encrypted connection for downloading user and group information, select **LDAPS** to use SSL to secure communications between the ASA and the LDAP server. It requires LDAP over SSL. Use port 636.

  The default is **None**, which means that user and group information is downloaded in clear text.

Step 8 (Optional) Use the **Test** button to validate the configuration.

Step 9 (Optional) Click **Add another configuration** to add multiple Active Directory (AD) servers to the AD realm. The AD servers need to be duplicates of each other and support the same AD domain. Therefore, the basic realm properties such as **Directory name**, **Directory Password**, and **Base Distinguished Name** must be the same across all AD servers associated with that AD realm.

Step 10 Click **Add**.

Edit an ASA Active Directory realm object

Note that you cannot change the Identity Source Type when editing an Identity source object. You must create a new object with the correct type.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon  in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created in the procedures above. Expand the configuration bar listed below to edit or test the hostname/IP address or encryption information.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create an ASA RADIUS server object or group

When you create or edit an identity source object such as a RADIUS server object or a group of RADIUS server objects, Security Cloud Control sends the configuration request to ASA devices through the SDC.

Create an ASA RADIUS server object

RADIUS servers provide AAA (authentication, authorization, and accounting) services.

Use the following procedure to create an object:

Procedure

Step 1 From the Security Cloud Control Home page, click **Firewall**.

Step 2 In the left pane, click **Objects**.

Step 3 Click **Create Object** ( )> **RA VPN Objects (ASA & FDM)** > **Identity Source**.

Step 4 Enter an **Object name** for the object.

Step 5 Select the **Device Type** as **ASA**.

Step 6 Select **RADIUS Server** as the **Identity Source Type**. Click **Continue**.

Step 7 Edit the Identity Source configuration with the following properties:

- **Server Name or IP Address** - The fully-qualified host name (FQDN) or IP address of the server.
- **Authentication Port** (Optional) - The port on which RADIUS authentication and authorization are performed. The default is 1812.
- **Timeout** - The length of time, 1-300 seconds, that the system waits for a response from the server before sending the request to the next server. The default is 10 seconds.
- Enter the **Server Secret Key**(Optional) - The shared secret that is used to encrypt data between the ASA device and the RADIUS server. The key is a case-sensitive, alphanumeric string of up to 64 characters, with no spaces. The key must start with an alphanumeric character or an underscore, and it can contain the special characters: $ & - _ . + @. The string must match the one configured on the RADIUS server. If you do not configure a secret key, the connection is not encrypted.

Step 8 Click **Add**.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create an ASA RADIUS server group

A RADIUS server group contains one or more RADIUS server objects. Servers in the group must be copies of each other and form a backup chain.

Use the following procedure to create an object group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click **Create Object** ( ) **RA VPN Objects (ASA & FDM) Identity Source**.

Step 3 Enter an **Object name** for the object.

Step 4 Select the **Device Type** as **ASA**.

Step 5 Select **RADIUS Server Group** as the Identity Source Type. Click **Continue**.

Step 6 Edit the Identity Source configuration with the following properties:

- **Dead Time** : Time to wait after the last server fails before reactivating all servers. Failed servers are reactivated only after all servers have failed.
- **Maximum Failed Attempts** : Number of failed requests sent to a RADIUS server before the system tries the next server. When this number is exceeded, the system marks the server as failed.
- **Dynamic Authorization/Port** Optional change of authorization (CoA) services. Enable only when this server group is used in RA VPN with Cisco ISE.

Step 7 Select an AD realm that supported the RADIUS server from the drop-down menu. If you have not already created an AD realm, click **Create** from inside the drop-down menu.

Step 8 Click the **RADIUS SERVER Add** button  to add existing RADIUS server objects. Optionally, you can create a new RADIUS server object from this window is necessary.

Note
Add RADIUS server objects in priority order. The first server is used until it becomes unresponsive, and ASA then uses the next server in the list.

Step 9 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Edit an ASA Radius server object or group

Use the following procedure to edit a Radius server object or Radius server group:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Locate the object you want to edit by using object filters and search field.

Step 3 Select the object you want to edit.

Step 4 Click the edit icon  in the **Actions** pane of the details panel.

Step 5 Edit the values in the dialog box in the same fashion that you created them in the procedures above. To edit or test the hostname/IP address or encryption information, expand the configuration bar.

Step 6 Click **Save**.

Step 7 Security Cloud Control displays the policies that will be affected by the change. Click **Confirm** to finalize the change to the object and any policy affected by it.

Step 8 Review and deploy now the changes you made, or wait and deploy multiple changes at once.

Create ASA RA VPN group policies

A group policy is a set of user-oriented attribute/value pairs for remote access VPN connections. The connection profile uses a group policy that sets terms for user connections after the tunnel is established. Group policies let you apply whole sets of attributes to a user or a group of users, rather than having to specify each attribute individually for each user.

The system includes a default group policy named "DfltGrpPolicy". You can create additional group policies to provide the services you require.

Note You cannot add inconsistent group policy objects to remote access VPN configuration. Resolve all inconsistencies before adding the group policy to the remote access VPN Configuration.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click + > **RA VPN Objects (ASA & FDM)** > **RA VPN Group Policy**.

Step 3 Enter a name for the group policy. The name can be up to 64 characters and spaces are allowed.

Step 4 In the **Device Type** drop-down, select **ASA**.

Step 5 Do any of the following:

- Click the required tabs and configure the attributes on the page:
  - General Attributes
  - AnyConnect Client Profiles, on page 536
  - Session Setting Attributes, on page 537
  - Address Assignment Attributes, on page 537
  - Split Tunneling Attributes, on page 537
  - AnyConnect Attributes, on page 539
  - Traffic Filters Attributes, on page 540
  - Windows Browser Proxy Attributes, on page 540

Step 6 Click **Save** to create the group policy.

ASA RA VPN group policy attributes

The section describes the attributes associated with the ASA remote access VPN group policy.

General Attributes

The general attributes of a group policy define the name of the group and some other basic settings.

- **DNS Server**: Enter the IP address(s) of DNS servers for domain name resolution when connected to the VPN. You can separate the addresses using a comma.
- **Banner**: The banner text, or welcome message, to present to users at login. The default is no banner. The length can be up to 496 characters. The AnyConnect client supports partial HTML. To ensure that the banner displays properly to remote users, use the <BR> tag to indicate line breaks.

- **Default Domain**: The default domain name for users in the remote access VPN. For example, example.com. This domain is added to hostnames that are not fully-qualified, for example, serverA instead of serverA.example.com.

AnyConnect Client Profiles

This feature is supported on FTD running software version 6.7 or later versions.

Cisco AnyConnect VPN client offers enhanced security through various built-in modules. These modules provide services such as web security, network visibility into endpoint flows, and off-network roaming protection. Each client module includes a client profile that includes a group of custom configurations as per your requirement.

You can select the AnyConnect VPN profile object and AnyConnect modules to be downloaded to clients when the VPN user downloads the VPN AnyConnect client software.

1. Choose or create an AnyConnect VPN profile object. See Upload RA VPN AnyConnect Client Profile, on page 562. Except for DART and Start Before Login modules, the AnyConnect VPN profile object must be selected.
2. Click **Add Any Connect Client Module**.

   The following AnyConnect modules are optional and you can configure these modules to be downloaded with VPN AnyConnect client software:

   - **AMP Enabler** — Deploys advanced malware protection (AMP) for endpoints.
   - **DART** — Captures a snapshot of system logs and other diagnostic information and creates a .zip file on your desktop so you can conveniently send troubleshooting information to Cisco TAC.
   - **Feedback** — Provides information about the features and modules customers have enabled and used.
   - **ISE Posture** — Uses the OPSWAT library to perform posture checks to assess an endpoint's compliance.
   - **Network Access Manager** — Provides 802.1X (Layer 2) and device authentication to access both wired and wireless networks.
   - **Network Visibility** — Enhances the enterprise administrator's ability to do capacity and service planning, auditing, compliance, and security analytics.
   - **Start Before Login** — Forces the user to connect to the enterprise infrastructure over a VPN connection before logging on to Windows by starting AnyConnect before the Windows login dialog box appears.
   - **Umbrella Roaming Security** — Provides DNS-layer security when no VPN is active.
   - **Web Security** — Analyzes the elements of a web page, allows acceptable content, and blocks malicious or unacceptable content based on a defined security policy.
3. In the **Client Module** list, select an **AnyConnect module**.
4. In the **Profile** list, choose or create a profile object containing an AnyConnect Client Profile.
5. Select **Enable Module Download** to enable endpoints to download the client module along with the profile. If not selected, the endpoints can download only the client profile.

Session Setting Attributes

The session settings of a group policy control how long users can connect through the VPN and how many separate connections they can establish.

- **Maximum Connection Time**: The maximum length of time, in minutes, that users can stay connected to the VPN without logging out and reconnecting, from 1- 4473924 or blank. The default is unlimited (blank), but the idle timeout still applies.
- **Connection Time Alert Interval**: If you specify a maximum connection time, the alert interval defines the amount of time before the maximum time is reached to display a warning to the user about the upcoming automatic disconnect. The user can choose to end the connection and reconnect to restart the timer. The default is 1 minute. You can specify 1 to 30 minutes.
- **Idle Time**: The length of time, in minutes, that the VPN connection can be idle before it is automatically closed, from 1-35791394. If there is no communication activity on the connection for this consecutive number of minutes, the system stops the connection. The default is 30 minutes.
- **Idle Time Alert Interval**: The amount of time before the idle time is reached to display a warning to the user about the upcoming automatic disconnect due to an idle session. Any activity resets the timer. The default is 1 minute. You can specify 1 to 30 minutes.
- **Simultaneous Login Per User**: The maximum number of simultaneous connections allowed for a user. The default is 3. You can specify 1 to 2147483647 connections. Allowing many simultaneous connections might compromise security and affect performance.

Address Assignment Attributes

The address assignment attributes of a group policy define the IP address pool for the group. The pool defined here overrides the pool defined in any connection profile that uses this group. Leave these settings blank if you want to use the pool defined in the connection profile.

- **IPv4 Address Pool, IPv6 Address Pool**: These options define the address pools for the remote endpoints. Clients are assigned an address from these pools based on the IP version they use to make the VPN connection. Select the IP address pool that defines a subnet for each IP type you want to support. Leave the list empty if you do not want to support that IP version. For example, you could define an IPv4 pool as 10.100.10.0/24. The address pool cannot be on the same subnet as the IP address for the outside interface.
- **DHCP Scope**: If you configure DHCP servers for the address pool in the connection profile, the DHCP scope identifies the subnets to use for the pool for this group. The DHCP server must also have addresses in the same pool identified by the scope. The scope allows you to select a subset of the address pools defined in the DHCP server to use for this specific group. If you do not define a network scope, the DHCP server assigns IP addresses in the order of the address pools configured. It goes through the pools until it identifies an unassigned address. To specify a scope, enter the network object that contains the network number host address. For example, to tell the DHCP server to use addresses from the 192.168.5.0/24 subnet pool, enter a network object that specifies 192.168.5.0 as a host address. You can use DHCP for IPv4 addressing only.

Split Tunneling Attributes

The split tunneling attributes of a group policy define how the system should handle traffic meant for the internal network vs. externally-directed traffic. Split tunneling directs some network traffic through the VPN tunnel (encrypted) and the remaining network traffic outside the VPN tunnel (unencrypted or in clear text).

Typically, in remote access VPN, you might want the VPN users to access the Internet through your device. However, you can allow your VPN users to access an outside network while they are connected to an remote access VPN. This technique is called split tunneling or hair pinning. The split tunnel allows VPN connectivity to a remote network across a secure tunnel, and it also allows connectivity to a network outside the VPN tunnel. Split tunneling reduces the network load on the FTD devices and increases the bandwidth on the outside interface.

Before you begin

For creating a split tunnel policy for IPv4 networks and another for IPv6 networks, the access-list you specify is used for both protocols. So, the access-list should contain access control entries (ACEs) for both IPv4 and IPv6 traffic.

When an ASA device is onboarded to Security Cloud Control, it reads the extended ACLs associated with the device. See Split Tunnel Configuration for more information.



Note Ensure that you specify the network intended for split tunneling as the source network in the ACL you are creating.

- **IPv4 Split Tunneling**, **IPv6 Split Tunneling**: You can specify different options based on whether the traffic uses IPv4 or IPv6 addresses, but the options for each are the same. If you want to enable split tunneling, specify one of the options that require you to select network objects.
  - **Allow all traffic over tunnel**: Do no split tunneling. Once the user makes an remote access VPN connection, all the user's traffic goes through the protected tunnel. This is the default. It is also considered the most secure option.
  - **Allow specified traffic over the tunnel**: Select the extended access list that defines the source network. Any traffic from these sources goes through the protected tunnel. The client routes traffic from any other source to connections outside the tunnel (such as a local Wi-Fi or network connection).
  - **Exclude networks specified below**: Select the network objects that define the source network. The client routes any traffic from these sources to connections outside the tunnel. Traffic from any other source goes through the tunnel.
  - **Network List**: Select the extended ACL network that can have both IPv4 and IPv6 networks.
- **Split DNS**: You can configure the system to send some DNS requests through the secure connection while allowing the client to send other DNS requests to the DNS servers configured on the client. You can configure the following DNS behavior:
  - **Send DNS Request as per split tunnel policy**: With this option, DNS requests are handled the same way as the split tunnel options are defined. If you enable split tunneling, DNS requests are sent based on the destination addresses. If you do not enable split tunneling, all DNS requests go over the protected connection.
  - **Always send DNS requests over tunnel**: Select this option if you enable split tunneling, but you want all DNS requests sent through the protected connection to the DNS servers defined for the group.
  - **Send only specified domains over tunnel**: Select this option if you want your protected DNS servers to resolve addresses for certain domains only. Then, specify those domains, separating domain names with commas. For example, example.com, example1.com. Use this option if you

want your internal DNS servers to resolve names for internal domains, while external DNS servers handle all other Internet traffic.

AnyConnect Attributes

The AnyConnect attributes of a group policy define some SSL and connection settings used by the AnyConnect client for a remote access VPN connection.

- **SSL Settings**
  - **Enable Datagram Transport Layer Security (DTLS)**: Whether to allow the AnyConnect client to use two simultaneous tunnels: an SSL tunnel and a DTLS tunnel. Using DTLS avoids latency and bandwidth problems associated with some SSL connections and improves the performance of real-time applications that are sensitive to packet delays. If you do not enable DTLS, AnyConnect client users establishing SSL VPN connections connect with an SSL tunnel only.
  - **DTLS Compression**: Whether to compress Datagram Transport Layer Security (DTLS) connections for this group using LZS. DTLS Compression is disabled by default.
  - **SSL Compression**: Whether to enable data compression, and if so, the method of data compression to use, **Deflate**, or **LZS**. SSL Compression is **Disabled** by default. Data compression speeds up transmission rates but also increases the memory requirement and CPU usage for each user session. Therefore, SSL compression decreases the overall throughput of the device.
  - **SSL Rekey Method**, **SSL Rekey Interval**: The client can rekey the VPN connection, renegotiating the crypto keys and initialization vectors, to increase the security of the connection. Disable rekeying by selecting **None**. To enable rekey, select **New Tunnel** to create a new tunnel each time. (The **Existing Tunnel** option results in the same action as **New Tunnel**.) If you enable rekeying, also set the rekey interval, which is 4 minutes by default. You can set the interval to 4-10080 minutes (1 week).
- **Connection Settings**
  - **Ignore the DF (Don't Fragment) bit**: Whether to ignore the Don't Fragment (DF) bit in packets that need fragmentation. Select this option to allow the forced fragmentation of packets that have the DF bit set, so that these packets can pass through the tunnel.
  - **Client Bypass Protocol**: Allows you to configure how the secure gateway manages IPv4 traffic (when it is expecting only IPv6 traffic), or how it manages IPv6 traffic (when it is expecting only IPv4 traffic).

    When the AnyConnect client makes a VPN connection to the headend, the headend assigns it an IPv4, IPv6, or both an IPv4 and IPv6 address. If the headend assigns the AnyConnect connection only an IPv4 address or only an IPv6 address, you can configure the Client Bypass Protocol to drop network traffic for which the headend did not assign an IP address (default, disabled, not checked), or allow that traffic to bypass the headend and be sent from the client unencrypted or "in the clear" (enabled, checked).

    For example, assume that the secure gateway assigns only an IPv4 address to an AnyConnect connection and the endpoint is dual-stacked. When the endpoint attempts to reach an IPv6 address, if Client Bypass Protocol is disabled, the IPv6 traffic is dropped; however, if Client Bypass Protocol is enabled, the IPv6 traffic is sent from the client in the clear.
  - **MTU**: The maximum transmission unit (MTU) size for SSL VPN connections established by the Cisco AnyConnect VPN Client. The default is 1406 bytes. The range is 576 to 1462 bytes.

- **Keepalive Messages Between AnyConnect and VPN Gateway**: Whether to exchange keepalive messages between peers to demonstrate that they are available to send and receive data in the tunnel. Keepalive messages transmit at set intervals. The default interval is 20 seconds, and the valid range is 15 to 600 seconds.
- **DPD on Gateway Side Interval**, **DPD on Client Side Interval**: Enable Dead Peer Detection (DPD) to ensure that the VPN gateway or VPN client quickly detects when the peer is no longer responding. You can separately enable gateway or client DPD. The default interval is 30 seconds for sending DPD messages. The interval can be 5-3600 seconds.

Traffic Filters Attributes

The traffic filter attributes of a group policy define restrictions you want to place on users assigned to the group. You can use these attributes instead of creating access control policy rules to restrict remote access VPN users to specific resources, based on host or subnet address and protocol, or VLAN. By default, remote access VPN users are not restricted by the group policy from accessing any destination on your protected network.

- **Access List Filter**: Restrict access using an extended access control list (ACL). Select the Smart CLI Extended ACL object. The extended ACL lets you filter based on source address, a destination address, and protocol (such as IP or TCP). ACLs are evaluated on a top-down, first-match basis, so ensure that you place specific rules before more general rules. There is an implicit "deny any" at the end of the ACL, so if you intend to deny access to a few subnets while allowing all other access, ensure that you include a "permit any" rule at the end of the ACL. Because you cannot create network objects while editing an extended ACL Smart CLI object, you should create the ACL before editing the group policy. Otherwise, you might need to simply create the object, then go back later to create the network objects and then all the access control entries that you need. To create the ACL, log in to FDM, go to **Device** > **Advanced Configuration** > **Smart CLI** > **Objects**, create an object, and select **Extended Access List** as the object type.
- **Restrict VPN to VLAN**: Also called "VLAN mapping," this attribute specifies the egress VLAN interface for sessions to which this group policy applies. The system forwards all traffic from this group to the selected VLAN. Use this attribute to assign a VLAN to the group policy to simplify access control. Assigning a value to this attribute is an alternative to using an ACL to filter traffic on a session. Ensure that you specify a VLAN number that is defined on a subinterface on the device. Values range from 1 to 4094.

Windows Browser Proxy Attributes

The Windows browser proxy attributes of a group policy determine how, and whether, a proxy defined on the user's browser operates.

You can select one of the following values for **Browser Proxy During VPN Session**:

- **No change in endpoint settings**: Allow the user to configure (or not configure) a browser proxy for HTTP and use the proxy if it is configured.
- **Disable browser proxy**: Do not use the proxy defined for the browser, if any. No browser connections will go through the proxy.
- **Auto detect settings**: Enable the use of automatic proxy server detection in the browser for the client device.

- **Use custom settings**: Define a proxy that should be used by all client devices for HTTP traffic. Configure the following settings:
  - **Proxy Server IP or Hostname**, **Port**: The IP address, or hostname, of the proxy server, and the port used for proxy connections by the proxy server. The host and port combined cannot exceed 100 characters.
  - **Browser Proxy Exemption List**: Connections to the hosts/ports in the exemption list do not go through the proxy. Add all the host/port values for destinations that should not use the proxy. For example, www.example.com port 80. Click **Add proxy exemption** to add items to the list. Click the trash can icon to delete items. The entire proxy exception list, combining all addresses and ports, cannot be longer than 255 characters.

Create ASA Remote Access VPN Configuration

Security Cloud Control allows you to add one or more Adaptive Security Appliance (ASA) devices to the remote access VPN configuration wizard and configure the VPN interfaces, access control, and NAT exemption settings associated with the devices. Therefore, each remote access VPN configuration can have connection profiles and group policies shared across multiple ASA devices that are associated with the remote access VPN configuration. Further, you can enhance the configuration by creating connection profiles and group policies.

You can either onboard an ASA device that has already been configured with remote access VPN settings or a new device without remote access VPN settings. See Onboard ASA device to Security Cloud Control Firewall Management, on page 215. When you onboard an ASA device that already has remote access VPN settings, Security Cloud Control automatically creates a "Default remote access VPN Configuration" and associates the ASA device with this configuration. Also, this default configuration can contain all the connection profile objects that are defined on the device. See Read RA VPN Configuration of an Onboarded ASA Device for more information. Security Cloud Control allows you to delete the default configuration.



Important

- You are not allowed to add ASA and FTD in the same Remote Access VPN Configuration.
- An ASA device cannot have more than one remote access VPN Configuration.

Before you begin

Before adding the ASA device to the remote access VPN configuration, the following prerequisites must be met on the ASA device:

- License requirements.

  Device must be enabled for export-controlled functionality.

  To view the license summary of your ASA device, execute the show license summary command in the ASA command-line interface.

  To use the Security Cloud Control ASA CLI interface, see Use the command line interface.

  - Example of export-controlled functionality enabled in the license summary :

```
Registration: Status: REGISTERED Smart Account: Cisco SVS temp-request access
licensing@cisco.com Export-Controlled Functionality: ALLOWED
```

```
Last Renewal Attempt: None

Next Renewal Attempt: Jun 08 2021 09:46:22 UTC
```

The 'Export-Controlled Functionality' property must be in the 'Allowed' state for creating or editing the VPN configuration.

If this property is in the 'Not Allowed' state, Security Cloud Control displays an error message ('remote access VPN cannot be configured for devices which are not export compliant.') when you are creating or modifying the VPN configuration and doesn't allow remote access VPN configuration on the device.

- Device Identity Certificates.

  Certificates are required to authenticate connections between the clients and the ASA device. Before starting the VPN configuration, ensure that the identity certificate is already present on the ASA device.

  To determine whether or not the certificate is present on the device, execute the **show crypto CA Certificates** command in the ASA command-line interface.

  To use the Security Cloud Control ASA CLI interface, see ASA command line interface, on page 359.

  If the identity certificate is not present or you want to enroll in a new certificate, install them on ASA using Security Cloud Control. See ASA Certificate Management.

  The usage of digital certificates in remote access VPN context is explained in Remote Access VPN Certificate-Based Authentication, on page 559.

- Outside interfaces.

  The outside interfaces must be configured already on the ASA device. **You need to use either ASDM or ASA CLI to configure interfaces**. To know configure interfaces using ASDM, see the "Interfaces" book of the Cisco ASA Series General Operations CLI Configuration Guide, X.Y.

- Download the AnyConnect packages and upload them to a remote server. Later, use the remote access VPN wizard or ASA File Management wizard to upload the AnyConnect software packages from the server to ASAs. See Manage AnyConnect Software Packages on an ASA Device for instructions.

- There are no configuration deployments pending.

- If you are using the local database for authentication Add user accounts to the local database using ASDM or ASA CLI.

  To add user accounts using ASDM, see the "Add a User Account to the Local Database" section in the "AAA Servers and the Local Database" book of the Cisco ASA Series VPN CLI Configuration Guide, X.Y.

  To add user accounts using ASA CLI, execute **username[***username***] password [***password***] privilege [***priv_level]* command.

- ASA changes are synchronized to Security Cloud Control.

  1. In the left pane, click **Security Devices** and search for one or more ASA devices to be synchronized.
  2. Select one or more devices and then click **Check for changes**. Security Cloud Control communicates with one or more FTD devices to synchronize the changes.

- Remote access VPN configuration group policy objects are consistent.

  - Ensure that all inconsistent group policy objects are resolved as they cannot be added to the remote access VPN configuration. Either address the issue or remove inconsistent group policy objects

from the **Objects** page. For more information see, Resolve Duplicate Object Issues and Resolve Inconsistent Object Issues.

Procedure

Step 1 Onboard ASA device to Security Cloud Control Firewall Management, on page 215.

Step 2 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 3 Click the blue plus button to create a new remote access VPN configuration.

Step 4 Enter a name for the Remote Access VPN configuration.

Step 5 Click the blue plus button to add ASA devices to the configuration.

You can add the device details and configure network traffic-related permissions that are associated with the device.

a. Provide the following device details:

- **Device**: Select an ASA device that you want to add and click **Select**. **Important**: You are not allowed to add ASA and FTD in the same Remote Access VPN Configuration.
- **Certificate of Device Identity**: Select the internal certificate used for establishing the identity of the device. This establishes the device identity for AnyConnect clients when they make a connection to the device. Clients must accept this certificate to complete a secure VPN connection.
- **Outside Interface**: Select the interface to which users connect when making the remote access VPN connection. Although this is normally the outside (internet-facing) interface, choose whichever interface is between the device and the end-users you are supporting with this connection profile.

  Attention
  You cannot create or modify remote access VPN configuration for devices that are not export compliant. You must license the ASA device with export-controlled functionality enabled and try again.

b. Click **Continue** to configure the traffic permissions.

- **Bypass Access Control policy for decrypted traffic (sysopt permit-vpn)**: Decrypted traffic is subjected to Access Control Policy inspection by default. Enabling this option bypasses the decrypted traffic option bypasses the access control policy inspection, but the VPN Filter ACL and the authorization ACL downloaded from the AAA server are still applied to VPN traffic.

  Note that if you select this option, the system configures the sysopt connection permit-vpn command, which is a global setting. This will also impact the behavior of site-to-site VPN connections.

  If you do not select this option, it might be possible for external users to spoof IP addresses in your remote access VPN address pool, and thus gain access to your network. This can happen because you will need to create access control rules that allow your address pool to have access to internal resources. If you use access control rules, consider using user specifications to control access, rather than source IP address alone.

  The downside of selecting this option is that the VPN traffic will not be inspected, which means that intrusion and file protection, URL filtering, or other advanced features will not be applied to the

traffic. This also means that no connection events will be generated for the traffic, and thus statistical dashboards will not reflect VPN connections.

- **NAT Exempt**: NAT exemption exempts addresses from translation and allows both translated and remote hosts to initiate connections with your protected hosts. Configure NAT Exempt to exempt traffic to and from the remote access VPN endpoints from NAT translation. See Exempt Remote Access VPN Traffic from NAT, on page 559.

c. Click **OK**.

The **AnyConnect Packages Detected** shows the AnyConnect packages that are already available on the device.

There are two options to upload AnyConnect package to ASA from remote access VPN wizard:

- (Option 1): Select a package from Security Cloud Control's repository. The ASA must have access to the internet.
- (Option 2): Specify the ftp/http/https/scp/smb/tftp URL location where the AnyConnect package is preloaded.

See Upload new AnyConnect Software Packages for instructions.

Note
Note: If you want to replace an existing package, see Replace an Existing AnyConnect Package.

Step 6 Click **OK**.

The ASA VPN configuration is created.

Modify ASA Remote Access VPN Configuration

You can modify the name and the device details of an existing remote access VPN configuration.

Procedure

Step 1 Select the configuration to be modified and under **Actions**, click **Edit**.

- Modify the name if required.
- Click the blue plus  button to add a new device
- Click to perform the following on the ASA device.
  - Click **Edit** to modify the existing remote access VPN configuration.
  - Click **Remove** to remove the ASA device from the remote access VPN configuration. All connection profiles and remote access VPN settings associated with that device except the group policies are deleted. You can remove the group policies explicitly from the objects page.

    Note

You cannot remove the ASA if that is the only device using the configuration. Alternatively, you can remove the remote access VPN configuration.

Step 2 Deploy Configuration Changes.

You can also search for remote access VPN configuration by typing the name of the configuration or device.

Configure ASA Remote Access VPN Connection Profile

A Remote Access VPN connection profile defines the characteristics that allow external users to create a VPN connection to the system using the AnyConnect client. Each profile defines the AAA servers and certificates used for authenticating users, the address pools for assigning users IP addresses, and the group policies that define various user-oriented attributes.

You can create multiple profiles within the remote access VPN configuration if you need to provide variable services to different user groups, or if you have various authentication sources. For example, if your organization merges with a different organization that uses different authentication servers, you can create a profile for the new group that uses those authentication servers.

A remote access VPN connection profile allows your users to connect to your inside networks when they are on external networks, such as their home network. Create separate profiles to accommodate different authentication methods.

Before you begin

Create ASA Remote Access VPN Configuration, on page 541.

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**. You can click a VPN configuration to view the summary information on how many connection profiles and group policies are currently configured.

Note
To know the group policies assigned to the device, in **Actions**, click **Group Policies**. Group Policies assigned to connection profiles are automatically added to the list and cannot be removed.

Step 2 Click the connection profile and under **Actions** in the sidebar at the right, click **Add Connection Profile**.

Step 3 Configure the basic connection attributes.

- **Connection Profile Name**: The name for this connection, up to 50 characters without spaces. For example, MainOffice.

  Note
  The name you enter here is what users will see in the connection list in the AnyConnect client. Choose a name that will make sense to your users.

- **Group Alias, Group URL**: Aliases contain alternate names or URLs for a specific connection profile. VPN users can choose an alias name in the AnyConnect client in the list of connections when they connect

to the ASA device. The connection profile name is automatically added as a group alias. You can also configure the list of group URLs, which your endpoints can select while initiating the Remote Access VPN connection. If users connect using the group URL, the system will automatically use the connection profile that matches the URL. This URL would be used by clients who do not yet have the AnyConnect client installed. Add as many group aliases and URLs as required. These aliases and URLs must be unique across all connection profiles defined on the device. Group URLs must start with **https://**.

- For example, you might have the alias Contractor and the group URLhttps://ravpn.example.com/contractor. Once the AnyConnect client is installed, the user would simply select the group alias in the AnyConnect VPN drop-down list of connections.

Step 4 Configure the primary and optionally, secondary identity sources. These options determine how remote users authenticate to the device to enable the remote access VPN connection. The simplest approach is to use AAA only and then select an AD realm or use the LocalIdentitySource. You can use the following approaches for **Authentication Type**:

- **AAA Only**: Authenticate and authorize users based on username and password. For details, see Configure AAA for a Connection Profile , on page 546.
- **Client Certificate Only**: Authenticate users based on client device identity certificate. For details, see Configure Certificate Authentication for a Connection Profile.
- **AAA and ClientCertificate**: Use both username/password and client device identity certificate.

Step 5 Configure the address pool for clients. The address pool defines the IP addresses that the system can assign to remote clients when they establish a VPN connection. For more information, see Configure Client Address Pool Assignment.

Step 6 Click **Continue**.

Step 7 Select the **Group Policy** to use for this profile from the list and click **Select**.

Step 8 Click **Continue**.

Step 9 Review the summary. First, verify that the summary is correct. You can see what end-users need to do to initially install the AnyConnect software and test that they can complete a VPN connection. Click  to copy the instructions to the clipboard, and then distribute them to your users.

Step 10 Click **Done**.

Step 11 Perform step 5 of End-to-End Remote Access VPN Configuration Process for ASA.

Configure AAA for a Connection Profile

Authentication, Authorization, and Accounting (AAA) servers use username and password to determine if a user is allowed access to the remote access VPN. If you use RADIUS servers, you can distinguish authorization levels among authenticated users, to provide differential access to protected resources. You can also use RADIUS accounting services to keep track of usage.

When configuring AAA, you must configure a primary identity source. Secondary and fallback sources are optional. Use a secondary source if you want to implement dual authentication, for example, using RSA tokens or DUO.

Primary Identity Source Options

- **Primary Identity Source for User Authentication**: Authentication provides a way to identify a user, typically by having the user enter a valid username and valid password before access is granted. The primary identity source used for authenticating remote users. End-users must be defined in this source or the optional fallback source to complete a VPN connection. Select one of the following:
  - An Active Directory (AD) identity realm.
  - A RADIUS server group.
  - LocalIdentitySource (the local user database): You can define users directly on the device and not use an external server.
- **Fallback Local Identity Source**: If the primary source is an external server, you can select the LocalIdentitySource as a fallback in case the primary server is unavailable. If you use the local database as a fallback source, ensure that you define the same local usernames/passwords as the ones defined in the external server.
- **Strip options**: A realm is an administrative domain. Enabling the following options allows the authentication to be based on the username alone. You can enable any combination of these options. However, you must select both check boxes if your server cannot parse delimiters.
  - **Strip Identity Source Server from Username**: Whether to remove the identity source name from the username before passing the username on to the AAA server. For example, if you select this option and the user enters domain\username as the username, the domain is stripped off from the username and sent to the AAA server for authentication. By default, this option is unchecked.
  - **Strip Group from Username**: Whether to remove the group name from the username before passing the username on to the AAA server. This option applies to names given in the username@domain format; the option strips the domain and @ sign. By default, this option is unchecked.

Secondary Identity Source

- **Secondary Identity Source for User Authorization**: The optional second identity source. If the user successfully authenticates with the primary source, the user is prompted to authenticate with the secondary source. You can select an AD realm, RADIUS server group, or the local identity source.
- **Advanced options**: Click the **Advanced** link and configure the following options:
  - **Fallback Local Identity Source for Secondary**: If the secondary source is an external server, you can select the LocalIdentitySource as a fallback in case the secondary server is unavailable. If you use the local database as a fallback source, ensure that you define the same local usernames/passwords as the ones defined in the secondary external server.
  - **Use Primary Username for Secondary Login**: By default, when using a secondary identity source, the system will prompt for both username and password for the secondary source. If you select this option, the system prompts for the secondary password only and uses the same username for the secondary source that was authenticated against the primary identity source. Select this option if you configure the same usernames in both the primary and secondary identity sources.
    - **Username for Session Server**: After successful authentication, the username is shown in events and statistical dashboards, is used for determining matches for a user- or group-based SSL decryption and access control rules and is used for accounting. Because you are using two

authentication sources, you need to tell the system whether to use the Primary or Secondary username as the user identity. By default, the primary name is used.

- **Password Type**: How to obtain the password for the secondary server. The default is **Prompt**, which means the user is asked to enter the password. Select **Primary Identity Source Password** to automatically use the password entered when the user authenticated to the primary server. Select **Common Password** to use the same password for every user, then enter that password in the **Common Password** field.

- **Authorization Server**: The RADIUS server group that has been configured to authorize remote access, VPN users. After authentication is complete, authorization controls the services and commands available to each authenticated user. Authorization works by assembling a set of attributes that describe what the user is authorized to perform, their actual capabilities, and restrictions. Were you not to use authorization, authentication alone would provide the same access to all authenticated users.

  Note that if the system obtains authorization attributes from the RADIUS server that overlap those defined in the group policy, the RADIUS attributes override the group policy attributes.

- **Accounting Server**: (Optional.) The RADIUS server group to use to account for the remote access VPN session. Accounting tracks the services users are accessing as well as the number of network resources they are consuming. The ASA device reports user activity to the RADIUS server. Accounting information includes when sessions start and stop, usernames, the number of bytes that pass through the device for each session, the service used, and the duration of each session. You can then analyze the data for network management, client billing, or auditing. You can use accounting alone or together with authentication and authorization.

Configure Certificate Authentication for a Connection Profile

Note This section is not applicable for **Authentication Type** as **AAA Only**.

You can use certificates installed on the client device to authenticate remote access VPN connections.

When using client certificates, you can still configure a secondary identity source, fallback source, and authorization and accounting servers. These are AAA options; for details, see Configure ASA Remote Access VPN Connection Profile, on page 545.

The following are the certificate-specific attributes. You can configure these attributes separately for primary and secondary identity sources. Configuring a secondary source is optional.

- **Username from Certificate**: Select one of the following:
  - **Map Specific Field**: Use the certificate elements in the order of **Primary Field** and **Secondary Field**. The defaults are CN (Common Name) and OU (Organizational Unit). Select the options that work for your organization. The fields are combined to provide the username, and this is the name used in events, dashboards, and for matching purposes in SSL decryption and access control rules.
  - **Use entire DN (distinguished name) as username**: The system automatically derives the username from the DN fields.

- **Advanced options** (not applicable for **Authentication Type** as **Client Certificate Only**): Click the **Advanced** link and configure the following options:
  - **Prefill username from certificate on user login window**: Whether to fill in the username field with the retrieved username when prompting the user to authenticate.
  - **Hide username in login window**: If you select the **Prefill** option, you can hide the username, which means the user cannot edit the username in the password prompt.

Configure Client Address Pool Assignment

There must be a way for the system to provide an IP address to endpoints that connect to the remote access VPN. The AAA server can provide these addresses, a DHCP server, an IP address pool configured in the group policy, or an IP address pool configured in the connection profile. The system tries these resources in that order and stops when it obtains an available address, which it then assigns to the client. Thus, you can configure multiple options to create a failsafe in case of an unusual number of concurrent connections.

Use one or more of the following methods to configure the address pool for a connection profile.

- **IPv4 Address Pool** and **IPv4 Address Pool**: First, create up to six network objects that specify subnets. You can configure separate pools for IPv4 and IPv6. Then, select these objects in the **IPv4 Address Pool** and **IPv6 Address Pool** options, either in the group policy or in the connection profile. You do not need to configure both IPv4 and IPv6, configure the addressing scheme you want to support. You also do not need to configure the pool in both the group policy and the connection profile. The group policy overrides the connection profile settings, so if you configure the pools in the group policy, leave the options empty in the connection profile. Note that the pools are used in the order in which you list them.
- **DHCP Servers**: First, configure a DHCP server with one or more IPv4 address ranges for the remote access VPN (you cannot configure IPv6 pools using DHCP). Then, create a host network object with the IP address of the DHCP server. You can then select this object in the **DHCP Servers** attribute of the connection profile.

Manage AnyConnect Software Packages on ASA Devices

You can perform one of the following steps to upload an AnyConnect package using the remote access VPN wizard:

- Upload the package from the Security Cloud Control repository.
- Upload the package from the server using HTTP, HTTPS, TFTP, FTP, SMB, or SCP protocols.

Upload an AnyConnect Package from Security Cloud Control Repository

The remote access VPN Configuration wizard presents AnyConnect packages per operating system from the Security Cloud Control repository, which you can select and upload to device. Make sure that the device has access to the internet and proper DNS configuration.

Note If the desired package is unavailable in the presented list or the device has no access to the internet, you can upload the package using the server where the AnyConnect packages are preloaded.

Procedure

Step 1 Click on the field that corresponds to an operating system and select an AnyConnect package.

Step 2 Click  to upload the package. If the checksum doesn't match, the AnyConnect package upload fails. You can see the device's workflow tab for more details about the failure.

Upload an AnyConnect Package to ASA from Server

Download the AnyConnect client software packages to your computer and upload them to a remote server accessible from ASAs. Later, use the RA VPN wizard or ASA File Management wizard to upload the AnyConnect software packages from that server to ASAs. DNS must be configured correctly on the device for URLs that use a domain name.

The ASA RA VPN wizard supports uploading packages using HTTP, HTTPS, TFTP, FTP, SMB, or SCP protocols.

The syntax of supported protocols for uploading the file:

Protocol	Syntax	Example
HTTP	http://[[path/]filename]	http://www.geonames.org/data-sources.html
HTTPS	https://[[path/]filename]	https://docs.aws.amazon.com/amazov/tagging.html
TFTP	tftp://[[path/]filename]	tftp://10.10.16.6/ftd/components.html
FTP	ftp://[[user[:password]@]server[:port]/[path/]filename]	ftp://[redacted]
SMB	smb://[[path/]filename]	smb://10.10.32.145//sambashare/hello.txt
SCP	scp://[[user[:password]@]server[/path]/ filename]	scp://rootciscol23@10.10.166//root/events_send.py

Before you begin

Make sure that you download the "AnyConnect Headend Deployment Package" for your desired operating systems. Always download the latest AnyConnect version to ensure that you have the latest features, bug fixes, and security patches. Regularly update the packages on the device.

Important If you choose to upload the package using the ASA File Management wizard, do not modify the package's name after downloading them.

Note You can upload one AnyConnect package per Operating System (OS): Windows, Mac, and Linux. You cannot upload multiple versions for a given OS type.

Procedure

Step 1 Download the AnyConnect packages from https://software.cisco.com/download/home/283000185.

- Make sure you accept the EULA and have K9 (encrypted image) privileges.
- Select the "AnyConnect Headend Deployment Package" package for your operating system. The package name will be similar to "anyconnect-win-4.7.04056-webdeploy-k9.pkg." There are separate headend packages for Windows, macOS, and Linux.

Step 2 Upload the AnyConnect packages to a remote server. Ensure that there is a network route from the ASA device and the server.

The ASA RA VPN wizard supports uploading packages HTTP, HTTPS, TFTP, FTP, SMB, or SCP protocols.

Important
If you are uploading the AnyConnect package to an HTTPS server, ensure that the following steps are performed:

- Upload the trusted CA certificate of that server on the ASA device.
- Install the trusted CA certificate on the HTTPS server.

Step 3 The remote server's URL must be a direct link without prompting for authentication. If the URL is pre-authenticated, you can download the file by specifying the RA VPN wizard's URL.

Step 4 If the remote server IP address is NATed, you have to provide the NATed public IP address of the remote server location.

Upload new AnyConnect Packages to ASA

You can either use the remote access VPN wizard or ASA File Management wizard to upload the AnyConnect software packages to ASAs.

Use the following procedure to upload new AnyConnect packages to an ASA device from an HTTP or HTTPS server:

Procedure

Step 1 In the **AnyConnect Package Detected**, you can upload separate packages for Windows, Mac, and Linux endpoints.

Step 2 In the corresponding platform field, specify the server's paths where the AnyConnect packages compatible for Windows, Mac, and Linux are pre-uploaded. Examples of server paths: 'http://<ip_address>:port_number/<folder_name>/anyconnect-win-4.8.01090-webdeploy-k9.pkg', 'https://<ip_address>:port_number/<folder_name>/anyconnect-linux64-4.7.03052-webdeploy-k9.pkg'.

Step 3 Click  to upload the package. Security Cloud Control validates if the path is reachable and the specified filename is a valid package. When the validation is successful, the names of the AnyConnect packages appear.

As you add more ASA devices to the remote access VPN configuration, you can upload the AnyConnect packages to them.

Step 4 Click **OK**. The AnyConnect packages are added to the remote access VPN configuration.

Step 5 Continue to Create an ASA RA VPN Configuration from step 5 onwards.

To complete a VPN connection, your users must install the AnyConnect client software on their workstation. For more information, see How Users Can Install the AnyConnect Client Software on ASA.

Upload AnyConnect Packages using File Management Wizard

Use the File Management wizard to upload AnyConnect packages to a single or multiple ASA devices from an HTTP, HTTPS, TFTP, FTP, SMB, or SCP server. When you want to push AnyConnect packages to multiple ASA devices simultaneously, the bulk upload comes in handy.

For more information, see ASA File Management.

Important If you choose to upload the package using the ASA File Management wizard, do not modify the package's name after downloading them.

Once the upload is complete, open the ASA RA VPN Configuration wizard and notice that the packages are auto-detected. If you upload multiple packages for an OS version, the wizard lists them in a drop-down allowing you to select one among them. Then, you can create the RA VPN configuration and deploy them to the devices.

Replace an AnyConnect Package

If the AnyConnect packages are already present on the devices, you can see them in the remote access VPN wizard. You can see all the available AnyConnect packages for an operating system in a drop-down list. You can select an existing package from the list and replace it with a new one but can't add a new package to the list.

Note If you want to replace an existing package with a new one, ensure that the new AnyConnect package is uploaded already to a server on the network that the ASA can reach.

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 2 Select the remote access VPN configuration to be modified, and under **Actions**, click **Edit**.

Step 3 In **AnyConnect Packages Detected**, click icon appearing beside the existing AnyConnect package. If there are multiple versions of AnyConnect package for an operating system, select the package you want to replace from the list and click **Edit**. The existing package disappears from the corresponding field.

Step 4 Specify the server's path where the new AnyConnect package is preloaded and click to upload the package.

Step 5 Click **OK**. The new AnyConnect package is added to the remote access VPN configuration.

Step 6 Continue to Create ASA Remote Access VPN Configuration, on page 541 from step 6 onwards.

Delete an AnyConnect Package

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 2 Select the remote access VPN configuration to be modified, and under **Actions**, click **Edit**.

Step 3 In **AnyConnect Packages Detected**, click icon appearing beside the AnyConnect package that you want to delete. If there are multiple versions of AnyConnect package for an operating system, select the package you want to delete from the list. The existing package disappears from the corresponding field.

Note
Click **Cancel** to stop the delete operation and retain the existing package,

Step 4 Click **OK**. The device's **Configuration Status** is in 'Not Synced' state.

Note
If you want to undo the delete action at this stage, go to **Security Devices** page and click **Discard Changes** to retain the existing AnyConnect package.

Step 5 Review and deploy configuration changes to the devices.

Manage and Deploy Pre-existing ASA Remote Access VPN Configuration

When you onboard an ASDM managed ASA device that already has remote access VPN settings, it discovers and displays the existing remote access VPN configurations. Security Cloud Control automatically creates a "Default remote access VPN Configuration" and associates the ASA device with this configuration. There are some remote access VPN configurations that aren't read or supported in the Security Cloud Control but can be configured in the Security Cloud Control command-line interface.

Note This section doesn't cover every supported or unsupported configuration in Security Cloud Control. Instead, it only describes the most commonly used ones.

To see the remote access VPN configurations from an onboarded ASA, perform the following steps:

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 2 Click the remote access VPN configuration corresponding to the onboarded ASA device. Security Cloud Control automatically creates a "**Default_RA_VPN_Configuration**" and associates the ASA device with this configuration. You can delete the default configuration. The ASA remote access VPN configurations that are read in Security Cloud Control are classified as follows:

- Device settings
- Connection profiles
- Group policies

Device Settings

The RA VPN configurations associated with the onboarded ASA device appear in **Default_RA_VPN_Configuration**. You need to click on this configuration to see the name of the ASA device (in the **Devices** pane on the right) associated with that configuration. You can also see the AnyConnect packages present in the ASA devices by clicking the edit button.

Connection Profile

Security Cloud Control supports and reads the connection profiles defined in "AnyConnect Client VPN Access" of the ASA device. It does not support the "Clientless SSL VPN Access" configuration.

To see the connection profile attributes, perform the following:

Procedure

Step 1 Expand **Default_RA_VPN_Configuration**.

Step 2 Click one of the connection profiles that you want and click **Edit**.

All the basic and advanced ASA RA VPN attributes can be seen in the **Connection Profile name and details** of the Security Cloud Control RA VPN configuration page.

Note You can delete the default configuration (Select the default RA VPN configuration and in the **Actions** pane on the right, click **Remove**).

Primary Identity Source

- Security Cloud Control reads the **Connection Aliases** and **Group URLs** attributes as **Group Alias** and **Group URL**.

Note

- The connection profiles configured with SAML, Multiple certificates and AAA, and Multiple certificates aren't read.
- The authentication server group with the interface and server group is not supported.

- Security Cloud Control supports the AnyConnect connection profiles configured with "AAA", "AAA and certificate", and "Certificate only" authentication methods in **Primary Identity Source**.
- The **AAA Server Group** is read in Security Cloud Control as **Primary Identity Source for User Authentication** in**Primary Identity Source** (You can see this attribute by selecting **AAA** or **AAA and Client Certificate** as the **Authentication Type**).
  - If the **AAA Server Group** has been configured something other than LOCAL, Security Cloud Control reads and displays this attribute in the **Fallback Local Identity Source** field under **Primary Identity Source**. (You can see this attribute by selecting **AAA** as the authentication type).

    To learn more about the server group attributes read in Security Cloud Control, see AAA Server Groups.

Secondary Identity Source

The **Secondary Identity Source** displays the secondary authentication attributes of the ASA device. To see these attributes, select **AAA** or **AAA and Client Certificate** as the authentication type, and click **View Secondary Identity Source**.

- The **Secondary Identity Source for User Authentication** displays the secondary authentication **Server Group** attribute.
  - If the **Server Group** has been configured something other than LOCAL, Security Cloud Control reads and displays this attribute in the **Fallback Local Identity Source for Secondary**field under **Secondary Identity Source**.
- Security Cloud Control doesn't support the **Attribute Server** and **Interface-Specific Authorization Server Groups** attributes.

To learn more about the server group attributes read in Security Cloud Control, see AAA Server Groups.

Authorization Server

- The **Authorization Server** displays the authorization **Server Group** attribute.
- Security Cloud Control doesn't support the authorization server group with interface and server group.

To learn more about the RADIUS server group attributes read in Security Cloud Control, see RADIUS Server Groups.

Accounting Server

The **Accounting Server** displays the accounting **Server Group** attribute. To learn more about the server group attributes read in Security Cloud Control, see RADIUS Server Groups.

Client Address Pool Assignment

Security Cloud Control reads the **Client Address Assignment attributes** (**DHCP Servers**, **Client Address Pools**, and **Client IPv6 Address Pools**) as objects. (You can see these attributes in **Client Address Pool Assignment**). The DHCP server details are read as literals.

Note Security Cloud Control doesn't support the IP address pools assigned on specific interfaces. However, these attributes can be seen in the ASA command-line interface (CLI).

AAA Server Groups

Security Cloud Control represents an LDAP Server Group and its associated LDAP Servers as an **Active Directory Realm** object. For Active Directory (AD), a realm is equivalent to an Active Directory domain. Note that Security Cloud Control does read the AD password for AD realm objects that are already present.

Procedure

Step 1 In the navigation bar on the left, choose **Objects**.

Step 2 Apply the **Active Directory Realms** filter to see this object.

Step 3 Select the **Active Directory Realm** object that you want and click **Edit** to see its details.

You can see that the AD realm contains the associated AD server and its configuration. If there are multiple Active Directory (AD) servers for the AD realm, the AD servers need to be duplicates of each other and support the same AD domain. Therefore, the basic realm properties such as **Directory name**, **Directory Password**, and **Base Distinguished Name** must be the same across all AD servers associated with that AD realm. Security Cloud Control displays a warning message in the Active Directory Realm object if these properties aren't the same. You have to correct these properties to make them consistent across the AD servers. If you continue without addressing this warning, Security Cloud Control uses one of the AD server properties and applies it to other servers in that realm object.

RADIUS Server Group

The AAA RADIUS Server Group attributes of the ASA device are read in Security Cloud Control as RADIUS Server Group objects.

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Apply the **RADIUS Server Group** filter to see this object.

Step 3 Select the object that you want and then click **Edit** to see its details.

- The **Enable dynamic authorization** in ASA is read in Security Cloud Control as **Dynamic Authorization (for RA VPN only)**.
- The **Depletion** option in **Reactivation Mode** is read in Security Cloud Control, and therefore the **Dead Time** value associated with depletion time is read in Security Cloud Control. However, the **Timed** attribute is not read in Security Cloud Control.

- Security Cloud Control doesn't support **Accounting Mode**, **Timed**, **Enable interim accounting update**, **Enable interim accounting update**, and **Use authorization only mode**.

RADIUS Server

When Security Cloud Control reads the Radius Servers from ASA, it creates a Radius server object specifies the name as "Name of the Radius server group_server name or IP address".

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Apply the **RADIUS Server** filter to see this object.

Step 3 Select the object that you want and then click **Edit** to see its details.

Group Policy

In the **Group Policy** section, click the drop-down to view the group policies associated with the device.



Attention Security Cloud Control reads the group policies configured with tunneling protocol as **SSL VPN Client**.

Security Cloud Control reads most of the group policy attributes configured in ASA. The information is displayed across the tabs in the RA VPN Group policy wizard. To see the details of group policies read from the ASA device, you need to perform the following:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Filter for **RA VPN Group Policy**.

Step 3 Select the group policy associated with that device and click **Edit**.

Note
Security Cloud Control doesn't support the Standard Access Control Lists (ACL) defined in the split tunneling in the ASA device. It supports the Extended Access Control Lists (ACL) and reads them as ACLs in the ASA policies.

To see the policies, on the navigation bar, you can click **Policies** > **ASA Access Policies**.

To select the extended ACLs, perform the following:

- Click the **Split Tunneling** tab.

- Based on whether the traffic in ASA uses IPv4 or IPv6 addresses, select "Allow specified traffic over tunnel" or "Exclude networks specified below" from the corresponding drop-down list. Select the extended ACLs that are imported from ASA.

Create an ASA IP address pool

ASA address pool objects define IPv4 or IPv6 address pools that ASA devices assign to remote VPN clients. If you configure more than one address pool for a connection profile or group policy, the ASA uses the pools in the order in which you added them.

To define an IPv4 address pool, provide the IP address range. For example, 10.10.147.100 - 10.10.147.177.

To define an IPv6 address pool, provide the starting IP address, prefix, and number of addresses in the pool. For example, 2001:DB8:1::1.

If you assign addresses from a nonlocal subnet, add pools that fall on subnet boundaries so that routes for these networks are easier to add.

Perform the following to create an IP address pool:

Procedure

Step 1 In the left pane, click **Objects**.

Step 2 Click the blue plus button and select **ASA** > **Address Pool**.

Step 3 In the **Create IP Address Pool** dialog box, enter this information:

- **Object Name**: Enter the name of the address pool. It can be up to 64 characters
- **IPv4 address pool**: Select this radio button to configure IPv4 address pools.
  - **IPv4 Address Range**: Enter the first IP address and the last IP address available in each configured pool. For example, 10.10.147.100 - 10.10.147.177.
  - **Mask**: Identifies the subnet on which this IP address pool resides.
- **IPv6 address pool**: Select this radio button to configure IPv6 address pools.
  - **IPv6 Address**: Enter the first IP address available in the configured pool and prefix length in bits in <address>/<prefix> format. For example, 2001:DB8:1::1/3.
  - **Number of Addresses**: Identifies the number of IPv6 addresses, starting at the IP Address, that are in the pool.

Step 4 Click **Save**.

Remote Access VPN Certificate-Based Authentication

The remote access VPN uses digital certificates for authenticating secure gateways and AnyConnect clients (endpoints) in the following scenarios:

Important Security Cloud Control handles the installation of digital certificates on the VPN headends (ASA FTD). It does not handle the installation of certificates on the AnyConnect client device. The administrator of your organization must handle it.

- Identify and authenticate the VPN headend device (ASA FTD):

  VPN headends require an identity certificate to identify and authenticate themselves when the AnyConnect client requests a VPN connection. Using Security Cloud Control, you must install the identity certificate on the device. See Installing an Identity Certificate Using PKCS12 or Certificate And Key. It is not mandatory to install the issuer's CA certificate on the AnyConnect client.

  While creating the Remote Access VPN configuration from Security Cloud Control, assign the enrolled identity certificate to the outside interface of the device and download the configuration to the device. The identity certificate becomes fully operational on the outside interface of the device.

  When the AnyConnect client attempts to connect to VPN, the device authenticates itself by presenting its identity certificate to the AnyConnect client. The AnyConnect client verifies this identity certificate with its trusted CA certificate and trusts the certificate and thereby the device. If the CA certificate isn't installed on the AnyConnect client, the user must manually trust the device when prompted.

- Identify and authenticate the AnyConnect client:

Note This applies when you use "Client Certificate Only" or "AAA and Client Certificate" as the authentication method in the connection profile of remote access VPN configuration. It does not apply for "AAA Only".

  Once the device is trusted, the AnyConnect client needs to authenticate itself to complete the VPN connection. You must install an identity certificate on the AnyConnect client and using Security Cloud Control, install a trusted CA certificate on the device. These certificates must be issued from the same certificate authority. See Installing Trusted CA Certificate in ASA.

  The AnyConnect client presents its identity certificate and the device verifies this certificate with its trusted CA certificate and establishes the VPN connection.

Exempt Remote Access VPN Traffic from NAT

Configure NAT Exempt to exempt traffic to and from the remote access VPN endpoints from NAT translation. If you do not exempt VPN traffic from NAT, ensure that the existing NAT rules for the outside and inside interfaces do not apply to the remote access VPN pool of addresses. NAT exempt rules are manual static identity NAT rules for a given source/destination interface and network combination, but they are not reflected in the NAT policy, they are hidden. If you enable NAT Exempt, you must also configure the following.

- **Inside Interfaces**: Select the interfaces for the internal networks remote users will be accessing. NAT rules are created for these interfaces.

- **Inside Networks**: Select the network objects that represent internal networks remote users will be accessing. The networks list must contain the same IP types as the address pools you are supporting.

Before you begin

Create ASA network objects that match the configuration of the local IP address pools used in the connection profile and group policy of that device. These network objects must be assigned as the destination address and translated address when configuring the NAT rule.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Use the filter and search field to find the ASA device for which you want to create the NAT rule.

Step 3 In the **Management** area of the details panel, click **NAT** NAT.

Step 4 Click + > **Twice NAT**.

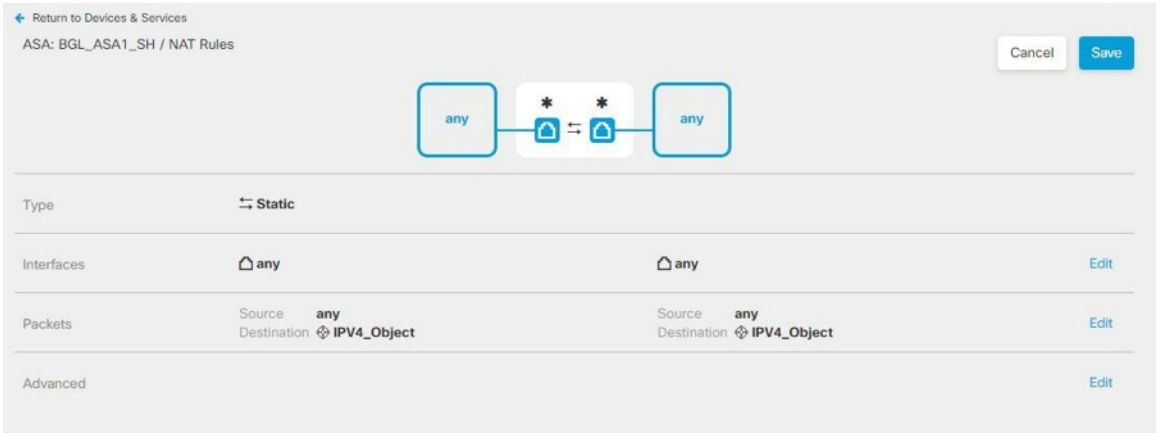
a. In section 1, select **Static.** Click **Continue**.

b. In section 2, select **Source Interface** = 'any' and **Destination Interface** = 'any'.Click **Continue**.

c. In section 3, select **Source Original Address** = 'any' and **Source Translated Address** = 'any'.

d. Select **Use Destination**.

1. **Destination Original Address** and **Source Translated Address**: Click **Choose** in the drop-down and select the network objects that match the configuration of the local IP address pools. In the below example, 'IPV4_Object' is the network object with the same configuration as the IPv4 address pool object used in the connection profile and group policy settings of the ASA (BGL_ASA1_SH) device.



2. Select **Disable proxy ARP for incoming packets**.
3. Click **Save**.
4. Repeat the process (from step 4) to create equivalent rules for each of the other network objects equivalent to IP address pools.

Step 5 Review and deploy configuration changes to the devices.

Install the AnyConnect Client Software on ASA

To complete a VPN connection, your users must install the AnyConnect client software. You can use your existing software distribution methods to install the software directly. Or, you can have users install the AnyConnect client directly from the ASA device.

Note Users must have Administrator rights on their workstations to install the software.

If you decide to have users initially install the software from the ASA device, inform users to perform the following steps:

Note Android and iOS users should download AnyConnect from the appropriate App Store.

Procedure

Step 1 Using a web browser, open **https://***ravpn-address*, where *ravpn-address* is the IP address or hostname of the outside interface on which you are allowing VPN connections. You identify this interface when you configure the remote access VPN. The system prompts the user to log in.

Step 2 Log into the site. Users are authenticated using the directory server configured for the remote access VPN. Log in must be successful to continue. If the login is successful, the system determines if the user already has the required version of the AnyConnect client. If the AnyConnect client is absent from the user's computer or is down-level, the system automatically starts installing the AnyConnect software. When the installation is finished, AnyConnect completes the remote access VPN connection.

Modify ASA Remote Access VPN Configuration

When ASA devices are onboarded to Security Cloud Control, it discovers and displays the pre-existing remote access VPN configurations from onboarded ASA devices. For more information, see Manage and Deploy Pre-existing ASA Remote Access VPN Configuration.

You can modify these configurations and download the new configuration to the device.

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 2 If you want to add or remove group policies to the VPN configuration, click the VPN configuration associated with the onboarded ASA device. In the Actions pane on the left, click **Group Policies**.

a) Click the blue + icon and configure the selections and click **Select**.

Step 3 Click the VPN configuration, and in the **Actions** pane, click **Edit**.

The wizard lists the ASA device associated with the configuration.

a) You can modify the following details in the same fashion as it was created:

- Change the name of the remote access VPN configuration.
- Click the three dots appearing in the row that shows the device details and click **Edit**.

For more information, see Create ASA Remote Access VPN Configuration, on page 541

Step 4 Click **OK**.

Step 5 Preview and deploy configuration changes for all devices, on page 597

Modify ASA Connection Profile

Procedure

Step 1 In the left pane, click **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**.

Step 2 Expand the VPN configuration associated with the onboarded ASA device, and select a connection profile.

Step 3 Under **Actions**, click **Edit**.

Step 4 Edit the values in the same fashion as it was created and click **Done**.

For more information, see Configure ASA Remote Access VPN Connection Profile, on page 545

Step 5 Preview and deploy configuration changes for all devices, on page 597

Upload RA VPN AnyConnect Client Profile

The Remote Access VPN AnyConnect Client Profile is a group of configuration parameters stored in a file. There are different AnyConnect client profiles containing configuration settings for the core client VPN functionality and for the optional client modules Network Access Manager, AMP Enabler, ISE posture, Network Visibility, Customer Feedback Experience profiles, Umbrella roaming security, and Web Security.

Security Cloud Control allows uploading of these profiles as objects which can be used in the group policy later.

- **AnyConnect VPN Profile** — AnyConnect client profiles are downloaded to clients along with the VPN AnyConnect client software. These profiles define many client-related options, such as auto-connect on startup and auto-reconnect, and whether the end-user can change the option from the AnyConnect client preferences and advanced settings. Security Cloud Control supports the XML file format.
- **AMP Enabler Service Profile** — The profile is used for the AnyConnect AMP Enabler. The AMP Enabler and this profile are pushed to the endpoints from FDM-managed device when a remote access VPN user connects to the VPN. Security Cloud Control supports XML and ASP file formats.
- **Feedback Profile** — You can add a Customer Experience Feedback profile and select this type to receive information about the features and modules customers have enabled and used. Security Cloud Control supports the FSP file format.

- **ISE Posture Profile** — Choose this option if you add a profile file for the AnyConnect ISE Posture module. Security Cloud Control supports XML and ISP file formats.
- **Network Access Manager Service Profile** — Configure and add the NAM profile file using the Network Access Manager profile editor. Security Cloud Control supports XML and NSP file formats.
- **Network Visibility Service Profile** — Profile file for AnyConnect Network Visibility module. You can create the profile using the NVM profile editor. Security Cloud Control supports XML and NVMSP file formats.
- **Umbrella Roaming Security Profile** — You must select this file type if you deploy the Umbrella Roaming Security module. Security Cloud Control supports XML and JSON file formats.
- **Web Security Service Profile** — Select this file type when you add a profile file for the Web security module. Security Cloud Control supports XML, WSO, and WSP file formats.

Before you begin

Use the suitable GUI-based AnyConnect profile editors to create the profiles you need. You can download the profile editors from Cisco Software Download Center in the AnyConnect Secure Mobility Client category and install the AnyConnect "Profile Editor - Windows / Standalone installer (MSI)." The profile editor installer contains stand-alone versions of the profile editors. The installation file is for Windows only and has the file name anyconnect-profileeditor-win-<version>-k9.msi, where <version> is the AnyConnect version. For example, anyconnect-profileeditor-win-4.3.04027-k9.msi. You must also install Java JRE 1.6 (or higher) before installing the profile editor.

Except for the Umbrella Roaming Security profile editor, this package contains all the profile editors required for creating the modules. For detailed information, see the *AnyConnect Profile Editor* chapter in the appropriate release of the Cisco AnyConnect Secure Mobility Client Administrator Guide for details. Download the Umbrella Roaming Security profile separately from the Umbrella dashboard. For detailed information, see the "Download the AnyConnect Roaming Security Profile from the Umbrella Dashboard" section of the "Umbrella Roaming Security" chapter in the Cisco Umbrella User Guide.

Procedure

Step 1 In the left pane, choose **Objects**.

Step 2 Click the blue plus  button.

Step 3 Click **RA VPN Objects (ASA & FDM)** > **AnyConnect Client Profile**.

Step 4 In the **Object Name** field, enter a name for the AnyConnect client profile.

Step 5 Click **Browse** and select the file you created using the Profile Editor.

Step 6 Click **Open** to upload the profile.

Step 7 Click **Add** to add the object.

Verify ASA Remote Access VPN Configuration

After you configure the remote access VPN and deploy the configuration to the device, verify that you can make remote connections.

Procedure

Step 1 From an external network, establish a VPN connection using the AnyConnect client. Using a web browser, open **https://***ravpn-address*, where *ravpn-address* is the IP address or hostname of the outside interface on which you are allowing VPN connections. If necessary, install the client software and complete the connection. See How Users Can Install the AnyConnect Client Software. If you configured group URLs, also try those URLs.

Step 2 In the **Security Devices** page, select the device (FTD or ASA) you want to verify and click **Command Line Interface** under **Device Actions**.

Step 3 Use the **show vpn-sessiondb** command to view summary information about current VPN sessions.

Step 4 The statistics should show your active AnyConnect Client session, and information on cumulative sessions, the peak concurrent number of sessions, and inactive sessions. Following is sample output from the command.

```
> show vpn-sessiondb
--------------------------------------------------------------------------------
VPN Session Summary
--------------------------------------------------------------------------------
                            Active : Cumulative : Peak Concur : Inactive
                           ----------------------------------------------
AnyConnect Client           :      1 :         49 :           3 :        0
  SSL/TLS/DTLS              :      1 :         49 :           3 :        0
Clientless VPN              :      0 :          1 :           1
  Browser                   :      0 :          1 :           1
--------------------------------------------------------------------------------


  Total Active and Inactive    :      1             Total Cumulative :     50
  Device Total VPN Capacity    :  10000
  Device Load                  :     0%
  --------------------------------------------------------------------------------

  --------------------------------------------------------------------------------
  Tunnels Summary
  --------------------------------------------------------------------------------
                               Active : Cumulative : Peak Concurrent
                              ----------------------------------------------
  Clientless                  :      0 :          1 :               1
  AnyConnect-Parent           :      1 :         49 :               3
  SSL-Tunnel                  :      1 :         46 :               3
  DTLS-Tunnel                 :      1 :         46 :               3
  --------------------------------------------------------------------------------
  Totals                      :      3 :        142
  --------------------------------------------------------------------------------

  --------------------------------------------------------------------------------
  IPv6 Usage Summary
  --------------------------------------------------------------------------------
                               Active : Cumulative : Peak Concurrent
                              ----------------------------------------------
  AnyConnect SSL/TLS/DTLS     :        :            :
    Tunneled IPv6             :      1 :         20 :           2
  --------------------------------------------------------------------------------
```

Step 5 Use the **show vpn-sessiondb anyconnect** command to view detailed information about current AnyConnect VPN sessions. Detailed information includes encryption used, bytes transmitted and received, and other statistics. If you use your VPN connection, you should see the bytes transmitted/received numbers change as you re-issue this command.

Step 6 Use the **show vpn-sessiondb anyconnect** command to view detailed information about current AnyConnect VPN sessions. Detailed information includes encryption used, bytes transmitted and received, and other statistics. If you use your VPN connection, you should see the bytes transmitted/received numbers change as

you re-issue this command.

```
> show vpn-sessiondb anyconnect

Session Type: AnyConnect

Username     : User1                  Index        : 4820
Assigned IP  : 172.18.0.1             Public IP    : 192.168.2.20
Assigned IPv6: 2009::1
Protocol     : AnyConnect-Parent SSL-Tunnel DTLS-Tunnel
License      : AnyConnect Premium
Encryption   : AnyConnect-Parent: (1)none SSL-Tunnel: (1)AES-GCM-256 DTLS-Tunnel: (1)AES256
Hashing      : AnyConnect-Parent: (1)none SSL-Tunnel: (1)SHA384  DTLS-Tunnel: (1)SHA1
Bytes Tx     : 27731                  Bytes Rx     : 14427
Group Policy : MyRaVpn|Policy         Tunnel Group : MyRaVpn
Login Time   : 21:58:10 UTC Mon Apr 10 2017
Duration     : 0h:51m:13s
Inactivity   : 0h:00m:00s
VLAN Mapping : N/A                    VLAN         : none
Audt Sess ID : c0a800fd012d400058ebfff2
Security Grp : none                   Tunnel Zone : 0
```

View ASA Remote Access VPN Configuration Details

Procedure

Step 1 In the left pane, choose **Secure Connections** > **End User Connections** > **Remote Access VPN** > **ASA & FDM**

Step 2 Click on a VPN configuration object present. The group shows summary information on how many connection profiles and group policies are currently configured.

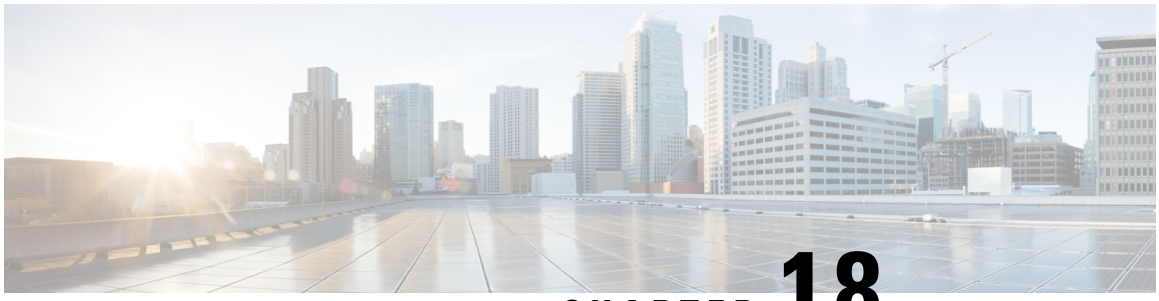
- Expand the remote access VPN configuration to view all connection profiles associated with them.
  - Click the add + button to add a new connection profile.
  - Click the view button () to open a summary of the connection profile and connection instructions. Under **Actions**, you can click **Edit** to modify the changes.
- You can click one of the following options under **Actions** to perform additional tasks:
  - Click **Group Policies** to assign/add group policies.
  - Click a configuration object or connection profile that you no longer need and click **Remove** to delete.



PART VI

Device Operations

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- Manage device configuration, on page 591
- Use the Security Cloud Control Command Line Interface Tool (CLI), on page 629
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CHAPTER 18

Manage onboarded device settings

This chapter provides guidance on managing the device settings of the onboarded device.

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- Changing a device's name in Security Cloud Control Firewall Management, on page 570
- Export a list of devices and services, on page 571
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Changing a device's IP address in Security Cloud Control Firewall Management

When you onboard an device to Security Cloud Control Firewall Management using an IP address, Security Cloud Control Firewall Management stores that IP address in its database and communicates with the device using that IP address. If the IP address of the device changes, you can update the IP address stored in Security Cloud Control Firewall Management to match the new address. Changing the device's IP address on Security Cloud Control Firewall Management does not change device's configuration.

To change the IP address, Security Cloud Control uses to communicate with a device, follow this procedure:

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**

Step 3 Click the **Devices** tab to locate the device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required device.

Step 5 Select the device whose IP address it is you want to change.

Step 6 Above the **Device Details** pane, click the edit button next to the device's IP address.



Step 7 Enter the new IP address in the field and click the blue check button.

No change is made to the device itself, so the device's Configuration Status will continue to show that it is Synced.

Changing a device's name in Security Cloud Control Firewall Management

All devices, models, templates, and services are given a name when they are onboarded or created in Security Cloud Control Firewall Management. You can change that name without changing the configuration of the device itself.

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Device** tab to locate the device.

Step 4 Select the device whose name it is you want to change.

Step 5 Above the **Device Details** pane, click the edit button next to the device's name.



Step 6 Enter the new name in the field and click the blue check button.

No change is made to the device itself, so the device's Configuration Status will continue to show that it is Synced.

Export a list of devices and services

This article explains how to export your list of devices and services to a comma-separated value (.csv) file. Once in that format, you can open the file in a spreadsheet application such as Microsoft Excel to sort and filter the items in your list.

The export button is available in both the Devices and Templates tab. You can also export details from devices under the selected device type tab.

Before you export your list of devices and services, look at the filter pane and determine if the **Security Devices** page is displaying the information you want to export. Clear all filters to view all managed devices and services, or apply filters to display a subset of your devices and services. The export function includes only the information currently displayed in the **Security Devices** page.

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab to export details from devices under that tab or click **All** to export details from all devices.

You can use the filter and search functionalities to find the required device.

Step 5 Click **Export list to CSV**.



Step 6 If prompted, save the .csv file.

Step 7 Open the .csv file in a spreadsheet application to sort and filter the results.

Export device configuration

You can only export one device configuration at a time. Use the following procedure to export a device's configuration to a JSON file:

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required device.

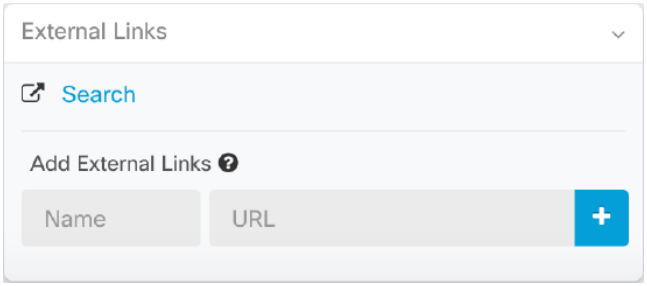
Step 5 Select the device you want so it is highlighted.

Step 6 In the **Actions** pane, select **Export Configuration**.

Step 7 Select **Confirm** to save the configuration as a JSON file.

External links for devices

You can create a hyperlink to an external resource and associate it with a device you manage with Security Cloud Control. You could use this feature to create a convenient link to the local manager of one of your devices (Adaptive Security Device Manager (ASDM) for ASA Firepower Device Manager (FDM) for an FTD). You could also use it to link to a search engine, documentation resource, a corporate wiki, or any other URL that you choose. You can associate as many external links with a device as you want. You can also associate the same link with multiple devices at the same time.



The links you create can reach anywhere, but your company's security requirements do not change. For example, if you ordinarily need to be connected to your corporate network, by being on-premises or through a VPN connection to reach a particular URL, those requirements remain. If your company blocks specific URLs, those URLs continue to be blocked. URLs that are not restricted continue to not be restricted.

Location Variable

We have created the {location} variable that you can incorporate in your URLs. This variable will be populated with the IP address of your device. For example,

```
https://{location}
```

should reach the ASDM for your ASA or the FDM of your FDM-managed device.

Create an External Link from your Device

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select a device or model.

You can use the filter and search functionalities to find the required device.

Step 6 Enter a name for the link in the details pane under the **External Links** section.

Step 7 Enter the URL for the link in the URL field. You need to specify the full URL. For example, for Cisco, enter http://www.cisco.com.

Step 8 Click + to associate the link with the device.

Create an External Link to ASDM FDM

Here is a convenient way to open the Adaptive Security Device Manager (ASDM) of your ASA the Firepower Device Manager (FDM) of your FDM-managed device, directly from Security Cloud Control.

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required device.

Step 5 Select a device or model.

Step 6 In the details pane, on the right, go to the **External Links** section.

Step 7 Enter a name for the link such as ASDM FDM.

Step 8 Enter https://{location} in the URL field. The {location} variable will be populated with the IP address of your device.

Step 9 Click the + box.

Create an External Link for Multiple Devices

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required devices.

Step 5 Select multiple devices or models.

Step 6 In the details pane, on the right, go to the **External Links** section.

Step 7 Enter a name for the link.

Step 8 Enter the URL you want to reach using one of these methods:

- Enter

  ```
  https://{location}
  ```

  in the URL field. The {location} variable will be populated with the IP address of your device. This creates an automatic link to the ASDM for your device.

- Enter the URL for the link in the URL field. You need to specify the full URL, for example, for Cisco enter http://www.cisco.com.

Step 9 Click + to associate the link with the device.

Edit or Delete External Links

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required device.

Step 5 Select a device or model.

Step 6 In the details pane, go to the **External Links** section.

Step 7 Mouse-over the name of the link to reveal the edit and delete icons.

Step 8 Click the appropriate icon to edit or delete the external link and confirm your action.

Edit or Delete External Links for Multiple Devices

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

You can use the filter and search functionalities to find the required devices.

Step 5 Select multiple devices or models.

Step 6 In the details pane, on the right, go to the **External Links** section.

Step 7 Mouse-over the name of the link to reveal the edit and delete icons.

Step 8 Click the appropriate icon to edit or delete the external link and confirm your action.

Bulk reconnect devices to Security Cloud Control Firewall Management

Security Cloud Control Firewall Management allows an administrator to attempt to reconnect more than one managed device to Security Cloud Control Firewall Management at the same time. When a device Security Cloud Control Firewall Management manages is marked "unreachable," Security Cloud Control Firewall Management can no longer detect out of band configuration changes or manage the device. There could be many different reasons for the disconnect. Attempting to reconnect the devices is a simple first step in restoring Security Cloud Control Firewall Management's management of the device.

Note If you are reconnecting devices having new certificates, Security Cloud Control Firewall Management automatically reviews and accepts the new certificates on the devices and continues to reconnect with them. However, if you are reconnecting with only one device, Security Cloud Control Firewall Management prompts you to review and accept the certificate manually to continue to reconnect with it.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate devices.

Step 3 Click the appropriate device type tab.

Use the filter to look for devices whose connectivity status is "unreachable."

Step 4 From the filtered results, select the devices you want to attempt to reconnect.

Step 5 Click **Reconnect** . Notice that Security Cloud Control only provides command buttons for actions that can be applied to all the selected devices.

Moving devices between organizations

After onboarding devices to a Security Cloud Control Firewall Management organization, you cannot migrate the devices from one Security Cloud Control Firewall Management organization to another. If you want to move your devices to a new organization, you need to remove the devices from the old tenant and re-onboard them to the new organization.

Device certificate expiry detection

The management certificate is used for accessing FDM-managed and ASA devices from Security Cloud Control Firewall Management, while the Cisco Secure Client (formerly AnyConnect) is necessary for using virtual private network features on ASA, FDM-managed, and FTD devices from Security Cloud Control Firewall Management.

Security Cloud Control Firewall Management actively monitors the expiration status of these certificates and notifies the user when these certificates are nearing their expiration date or have expired. This prevents any disruptions in device operations due to certificate expiry. You should renew the corresponding certificate to address this issue.

The management certificate expiry check applies to ASA and FDM-managed devices, while the Secure Client certificate expiry check applies to ASA, FDM-managed, and FTD devices.

View Certificate Expiry Notification

In the top right corner, click the **Notifications** () icon to view the most recent alerts that have occurred or affected the devices you have onboarded to your tenant. The **High Priority** section displays the certificate expiration notifications.

These notifications are sent 30, 14, and 7 days before the certificate expiration date and then every day thereafter until the certificate either expires or is renewed with a valid certificate. You can also subscribe to receive these notifications by email on the **Notification Settings** section of the user preferences page. For more information, see User Notification Preferences.

Write a device note

Use this procedure to create a single, plain-text, note file for a device.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 3 Click the appropriate device type tab.

Step 4 Select the device or model you want to create a note for.

Step 5 In the **Management** pane on the right, click **Notes**. Notes.

Step 6 Click the editor button on the right and select the Default text editor, Vim, or Emacs text editors.

Step 7 Edit the Notes page.

Step 8 Click **Save**.
The note is saved in the tab.

Delete a device from Security Cloud Control Firewall Management

Follow these steps to delete a device from Security Cloud Control Firewall Management:

Procedure

Step 1 Choose **Security Devices**.

Step 2 Select the device you want to delete.

Step 3 Click **Remove** in the **Device Actions** pane.

Step 4 To confirm device removal, click **OK**.

To keep the device onboarded, click **Cancel**.

Note
Both devices in an FDM-managed high-availability (HA) pair must be deleted simultaneously. Click the FDM-managed HA pair name instead of selecting individual peers.

Back up Firewall Threat Defense devices

To know how to back up Security Cloud Control-managed Firewall Threat Defense device types, use the following references:

Back Up Firewall Threat Defense devices managed by Cloud-Delivered Firewall Management Center

- In the Security Cloud Control left pane, choose **Administration** > **Firewall Management Center**.
- Choose **Cloud-delivered FMC** under the **FMC** tab.
- Click **Devices** on the right pane to navigate to the Cloud-Delivered Firewall Management Center.
- Continue to follow the steps in Back Up a Threat Defense Device from Cloud-delivered Firewall Management Center.

Back Up Firewall Threat Defense devices managed by On-Premises Firewall Management Center onboarded to Security Cloud Control Firewall Management

- In the Security Cloud Control left pane, choose **Administration** > **Firewall Management Center**.
- Choose the On-Premises Firewall Management Center whose Firewall Threat Defense devices you want to back up.
- Click **FMC Cross Launch URL** on the right pane to navigate to the on-premises Firewall Management Center or manually log in to the on-premises Firewall Management Center.
- Continue to follow the steps in *Back up a Device from the Management Center* in the Cisco Secure Firewall Management Center Administration Guide.

Back up Firewall Threat Defense devices managed by Firewall Device Managers onboarded to Security Cloud Control Firewall Management

Follow the steps in Back up an FDM-managed Device.

Manage Firewall Threat Defense devices through Security Cloud Control Firewall Management

Before you begin

Security Cloud Control Firewall Management provides a unified interface to manage Firewall Threat Defense devices, both in hardware and virtual formats.

Firewall Threat Defense devices associated with these three management applications can be managed on the Security Cloud Control platform:

- Secure Firewall Device Manager
- Secure Firewall Management Center
- Secure Cloud-Delivered Firewall Management Center

Procedure

Step 1 Log in to the Security Cloud Control platform.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **FTD** tab.

Step 4 Click  at the top-left corner.

Under **Devices/Services**, the filter pane provides filters that display Firewall Threat Defense devices based on the management application through which they are accessed from Security Cloud Control.

- **FDM**: Firewall Threat Defense device managed by Firewall Device Manager
- **FMC-FTD**: Firewall Threat Defense devices managed by Firewall Management Center

- **FTD**: Firewall Threat Defense devices managed by Cloud-Delivered Firewall Management Center

Step 5 To view the Firewall Threat Defense devices under a management application, check the corresponding check box.

Security devices overview

The **Security Devices** page displays all the physical and virtual onboarded devices and the templates created from the onboarded devices. The page classifies devices and templates based on their type and displays them in the corresponding tabs dedicated to each device type.

You can view the following details on the **Security Devices** page:

- The **Devices** tab displays all the live devices that are onboarded to Security Cloud Control.
- The **Templates** tab displays all the template devices created from live devices or configuration files imported to Security Cloud Control.

Filters in security devices

The **Filter** panel on the **Security Devices** page provides multiple options to narrow down results and find devices based on specific attributes, including **Devices/Services, Hardware Versions, Device End-of-Life, Software Versions, Snort Version, Configuration Status, Connectivity States, Conflict Detection, Health Status, Secure Device Connectors, and Labels**.

The Hardware End-of-Life (EoL) Filter

The **Hardware End-of-Life (EoL) filter** allows you to identify devices that are nearing or have reached their last day of hardware support. Running unsupported hardware may pose operational and security risks because Cisco no longer provides software updates, security patches, or technical support after the EoL date.

Note The Hardware EoL filter currently supports Firewall Threat Defense devices managed by on-premises Firewall Management Center and Cloud-Delivered Firewall Management Center, and ASA devices.

Procedure

1. In the **Devices** tab, click the filter icon.
2. From the list of available filters, under **Device End-of-Life**, select **Hardware End-of-Life**.

   The list now displays all devices that are approaching or have reached their hardware end-of-life.
3. Select a device to view more information on the right pane.
4. Scroll down to the **Device End of Life** section to view the following details:
   - The exact end-of-life date.
   - Remaining time until the last day of support.
5. Click **Know more**.

You can view a detailed page that provides the following information:

- Cisco's recommended replacement devices with product specifications, along with links to view the official data sheets.
- Guidance on submitting a request through the Contact Cisco page and options to connect directly with Cisco experts.
- Information on Cisco's product recycling program.

6. Click **Export** to download the device report in CSV format for offline analysis.

Security Cloud Control Firewall Management labels and filtering

Labels are used for grouping devices or objects. You can apply labels to one or more devices during onboarding or any time after onboarding. You can apply labels to objects after creating them. Once you apply labels to devices and objects, you can filter the contents of the device table or objects table using the corresponding label.



Note A label that is applied to a device is not extended to its associated objects, and a label applied to a shared object is not extended to its associated objects.

You can create a label group by using the syntax group name:label, for example, Region:East or Region:West. If you create these two labels, the group label would be Region and you could choose from East or West in that group.

Apply Labels to Devices and Objects

To apply a label to devices, perform these steps:

Procedure

Step 1 To add a label to a device, click **Inventory** in the navigation pane on the left.

Step 2 In the left pane, click **Security Devices**.

Step 3 To add a label to an object, click **Objects** in the navigation pane on the left.

Step 4 In the left pane, click **Objects**.

Step 5 Click the **Devices** tab to locate a device or the **Templates** tab to locate the model device.

Step 6 Click the appropriate device type tab.

Step 7 Select one or more devices.

Step 8 In the **Add Groups and Labels** field on the right, specify a label for the devices.

Step 9 Click the  icon.

Filters on security devices, policies, and objects page

Use filters on the **Security Devices**, **Policies**, and **Objects** pages to find devices and objects. To filter, select the filter icon in the left pane.

On the **Security Devices** page, the filter panel lets you filter devices by criteria such as device type, hardware version, software version, Snort version, configuration status, connection state, conflict detection, Secure Device Connector, and labels. You can apply filters within the selected device type tab.

When the **FTD** tab is open, the filter panel also lets you filter FTD devices by the management application that Security Cloud Control uses to access them.

To filter, click  in the left-hand pane of the Security Devices, Policies, and Objects tabs.



Note When the **FTD** tab is opened, the filter pane provides filters to show FDM-managed devices based on the management application through which the devices are accessed from Security Cloud Control.

- FDM: Devices managed using FTD API or Firewall Device Manager.
- FMC-FTD: Devices managed using Firepower Management Center.
- FTD: Devices managed using FTD Management.

Use Security Cloud Control Firewall Management search functionality

The Security Cloud Control Firewall Management platform has a highly efficient search function that makes it easy to find anything you need. The search bar on each page is tailored to the content of that page, while the global search allows for a comprehensive search across the entire tenant. This saves time and effort, as you can quickly locate the necessary information.

Page Level Search

The page-level search enables you to search specific items on the Security Devices, Policies, Objects, VPN, Change Log, and Jobs pages.

- In the **Security Devices** space, you can simply start typing in the search bar, and devices that fit the search criteria will be displayed. You can type any partial part name of the device, IP address, or the serial number of the physical device to find the device.
- In the **Policies** space, you can search policies by their name, components or objects used in them.
- In the **Objects** space, you can search for an object by typing any partial part of the name of the object, or partial IP Address, port, or protocols.
- In the **VPN** space, you can search by tunnel name, device name, and IP address used in the VPN policies.
- In the **Change log** space, you can search logs based on events, device names, or actions.

Procedure

Step 1 Navigate to the search bar near the top of the interface.

Step 2 Type the search criteria into the Search Bar and the corresponding results will be displayed.

Global Search

The global search feature allows you to quickly locate and navigate to devices managed by Security Cloud Control.

All search results are based on the indexing option you choose. These are the indexing options:

- Full Indexing—Requires that you invoke the full indexing process. This process scans all the devices and objects in the system and displays them in the search index only after you invoke the indexing. To invoke full indexing, you must have administrative privileges.

  For more information, see Initiate Full Indexing, on page 583.

- Incremental Indexing—An event-based indexing process where the search index automatically updates each time that a device or an object is added, modified, or deleted.

The information that you enter in the search field is not case-sensitive. You can perform a global search using these entities:

- Device Name—Supports partial device names, URL, IP address, or range.
- Object Types—Supports object name, object descriptions, and configured values.
- Policy Types—Supports policy name, policy description, rule name, and rule comments.

  Cloud-Delivered Firewall Management Center and on-premises Firewall Management Center managed in Security Cloud Control support the following policy types:

  - Access Control Policy
  - Prefilter Policy
  - Threat Defense NAT Policy

When you type a search expression, the interface begins to display search results and you do not need to press *Enter* to execute a search.

The search results display all devices and objects that match your search terms. If your search term matches more than one device or object, the results appear under categories such as devices, objects, and connected_fmc.

By default, the first item in the search result is highlighted and the related information for that item appears in the right pane. You can scroll through the search results and click any item to view the corresponding information. You can click the arrow icon besides the item to navigate to the corresponding page.

Note

- Global search does not display duplicate search results. For objects, the unique identifier of the shared object is used to navigate to the Object view.
- If you delete a device from Security Cloud Control, all associated objects are removed from the global search index.
- If you delete an object from the policy and retain the device before you initiate full indexing, the object remains in the global search index because it is associated with the device.

Initiate Full Indexing

Procedure

Step 1 In the left pane, choose **Administration** > **General Settings**.

Step 2 In the left pane, click **Administration** > **General Settings**.

Step 3 In Global Search, click **Initiate Full Indexing** to trigger indexing.



Note
Initiating full indexing clears existing indexing of the Security Cloud Control tenant.

Step 4 Click **here** to view the global search workflow.

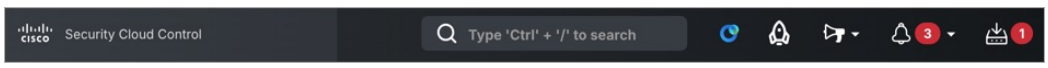
Perform a Global Search

Procedure

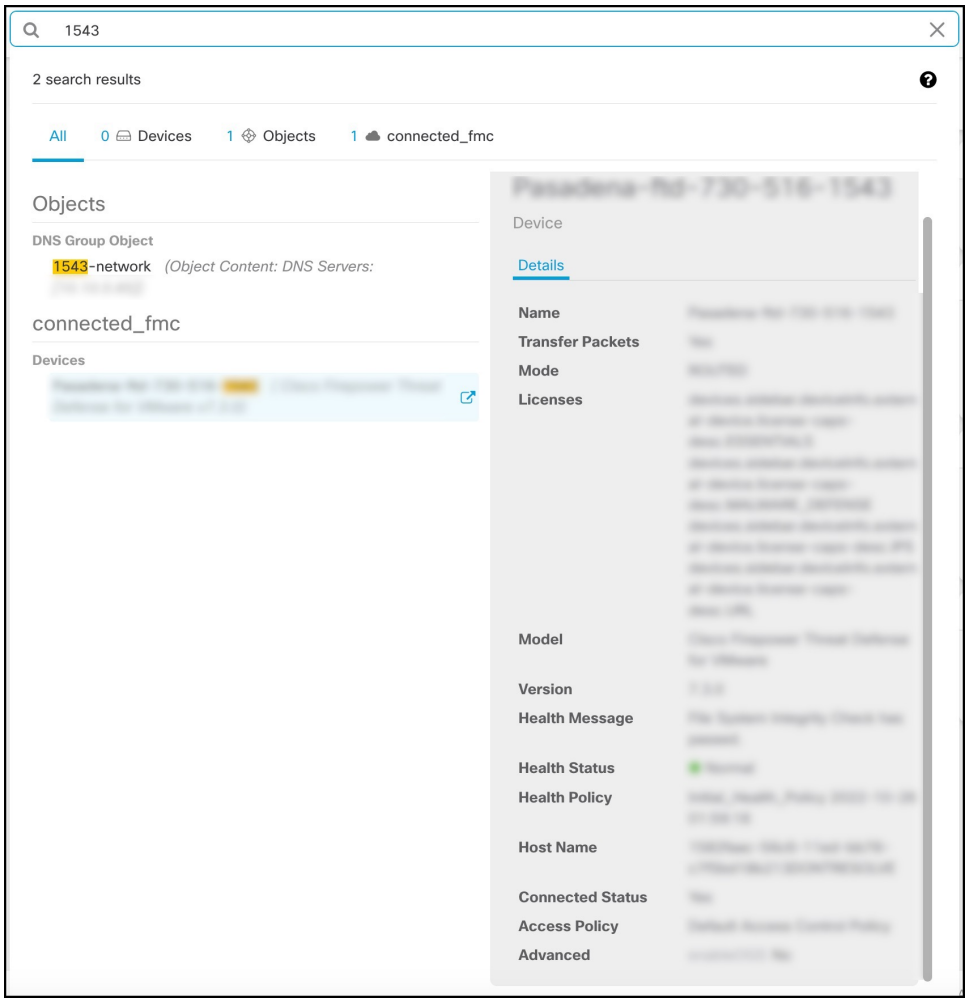
Step 1 Log into Security Cloud Control.

Step 2 Click the search icon in the Security Cloud Control page and enter the search strings in the search field that appears.

Alternatively, you can press and hold the **Ctrl** key and the / key simultaneously on Windows, or the **Command** key and / key on Mac, to open the search bar.



The search results display a list of possible items as you begin entering the search strings. The search results appear under four categories: All, Devices, Objects, Policies, and Cloud-Delivered Firewall Management Center. The right pane displays information for a selected search result.



Step 3 From the search result, select a device or an object, and click the arrow icon to navigate from the search results to the corresponding device and object page. From the search result, select an item, and click the arrow icon to navigate from the search results to the corresponding page.

Note
Selecting a search result for devices in the Cloud-Delivered Firewall Management Center, allows you to navigate to the Cloud-Delivered Firewall Management Center user interface within Security Cloud Control.

For information on Cloud-Delivered Firewall Management Center, see Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control.

Step 4 Click **X** to close the search bar.

Security devices overview

The **Security Devices** page displays all the physical and virtual onboarded devices and the templates created from the onboarded devices. The page classifies devices and templates based on their type and displays them in the corresponding tabs dedicated to each device type.

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Note The Hardware EoL filter currently supports Firewall Threat Defense devices managed by on-premises Firewall Management Center and Cloud-Delivered Firewall Management Center, and ASA devices.

Procedure

1. In the **Devices** tab, click the filter icon.
2. From the list of available filters, under **Device End-of-Life**, select **Hardware End-of-Life**.

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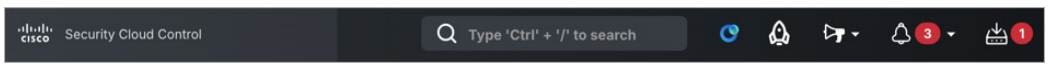
Perform a Global Search

Procedure

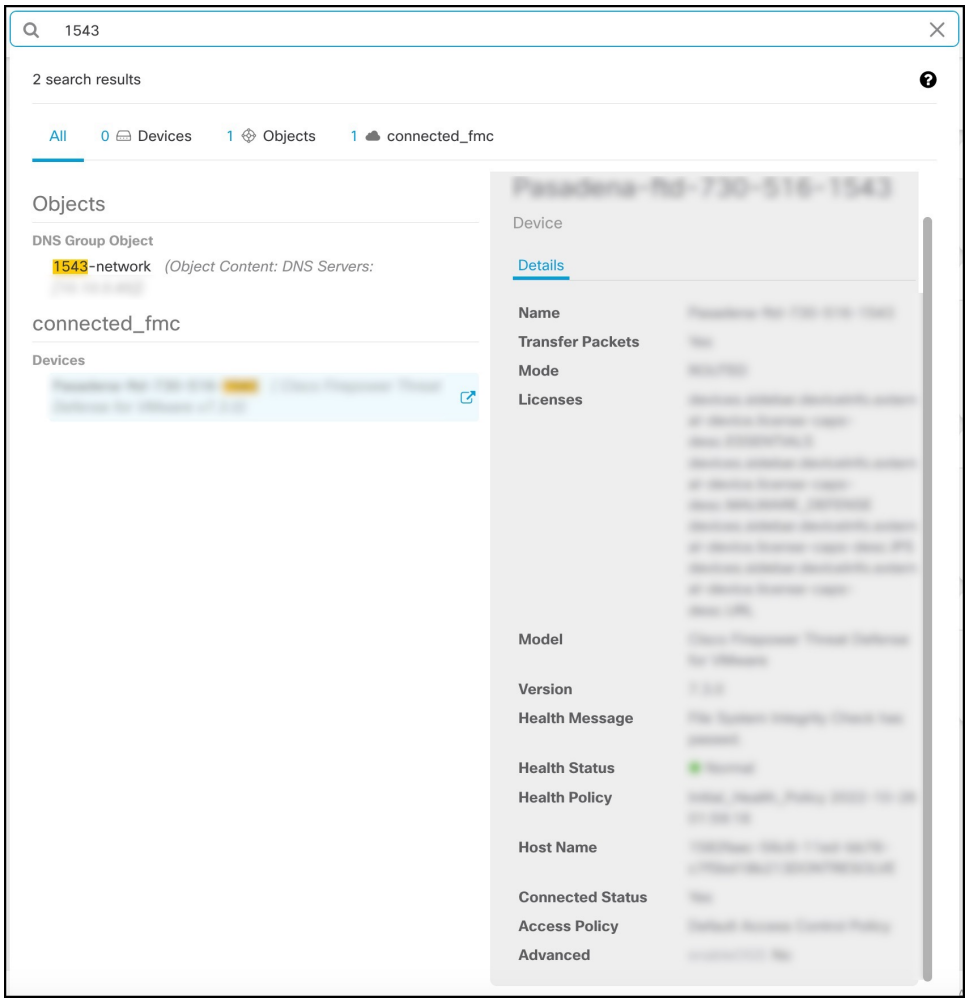
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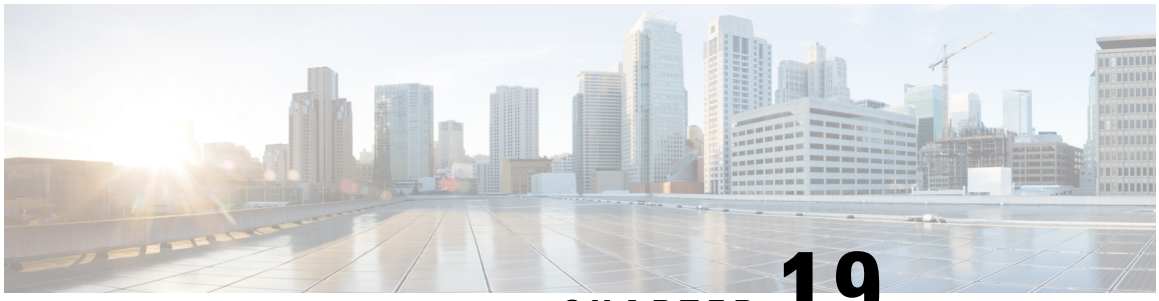


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Note
Selecting a search result for devices in the Cloud-Delivered Firewall Management Center, allows you to navigate to the Cloud-Delivered Firewall Management Center user interface within Security Cloud Control.

For information on Cloud-Delivered Firewall Management Center, see Managing Firewall Threat Defense with Cloud-Delivered Firewall Management Center in Security Cloud Control.

Step 4 Click **X** to close the search bar.



CHAPTER 19

Manage device configuration

To manage a device, Security Cloud Control stores a copy of the device configuration in its local database. When Security Cloud Control reads a configuration from a managed device, it copies and saves the configuration.

Security Cloud Control also reads and saves a copy of a device configuration when the device is onboarded. Each of these actions serves a specific purpose.

- **Discard Changes**: This action is available when a device configuration status is "Not Synced." In the **Not Synced** state, there are changes to the device configuration pending on Security Cloud Control. This option allows you to undo all pending changes. The pending changes are deleted and Security Cloud Control overwrites its copy of the configuration with the copy of the configuration stored on the device.
- **Check for Changes**: This action is available if the device configuration status is "Synced." Click **Check for Changes** to instruct Security Cloud Control to compare its copy of the device configuration with the copy stored on the device. If a difference is detected, Security Cloud Control immediately overwrites its copy of the device configuration with the copy stored on the device.
- **Review Conflict** and **Accept Without Review**: If you have enabled Conflict Detection on a device, Security Cloud Control checks for configuration changes made on the device every 10 minutes. If the copy of the configuration stored on the device has changed, Security Cloud Control notifies you by displaying the "Conflict Detected" configuration status.
  - **Review Conflict**: Click **Review Conflict** to review changes made directly on a device and accept or reject them.
  - **Accept Without Review**: This action overwrites the copy of the device configuration on Security Cloud Control with the latest copy of the configuration stored on the device. Security Cloud Control does not prompt you to confirm the differences in the two copies of the configuration before taking the overwriting action.

Read All: This is a bulk operation. You can select any number of devices in any state and click **Read All** to overwrite all the device configurations stored on Security Cloud Control with the configurations stored on the devices.

- **Deploy Changes**: When you make changes to a device configuration, Security Cloud Control saves your changes to its copy of the configuration. These changes remain **Pending** in Security Cloud Control until you deploy them to the device. If there are pending changes that have not been deployed, the device is in the **Not Synced** configuration state.

Pending configuration changes do not affect network traffic. They take effect only after Security Cloud Control deploys them to the device.

When Security Cloud Control deploys changes to a device configuration, only the elements that were changed are overwritten. The entire device configuration file is not overwritten. You can deploy changes to one device or multiple devices simultaneously.

- **Discard All**: This option appears after you click **Preview and Deploy...**. When you click **Preview and Deploy...**, Security Cloud Control displays a preview of the pending changes in Security Cloud Control. You can delete all pending changes from Security Cloud Control without deploying them to the selected devices by clicking **Discard All**. Unlike "Discard Changes," deleting the pending changes completes the operation.

Note You can schedule deployments or recurring deployments. For more information about scheduling an automatic deployment, refer to Schedule an Automatic Deployment, on page 605.

- Read, discard, and deploy configuration changes, on page 592
- Synchronizing configurations between Security Cloud Control and device, on page 610
- Synchronizing configurations between Security Cloud Control and device, on page 618

Read, discard, and deploy configuration changes

Read All Device Configurations

If a configuration change is made to a device outside of Security Cloud Control, the device configuration stored on Security Cloud Control and the device's local copy of its configuration are no longer the same. You many want to overwrite Security Cloud Control's copy of the device's configuration with the configuration stored on the device to make the configurations the same again. You can perform this task on many devices simultaneously using the **Read All** link.

For more information about how Security Cloud Control manages the two copies of the device configuration, refer to Reading, Discarding, Checking for, and Deploying Configuration Changes.

Here are three configuration statuses where clicking **Read All** will overwrite Security Cloud Control's copy of the device's configuration with the device's copy of the configuration.

- **Conflict Detected**: If conflict detection is enabled, Security Cloud Control polls the devices it manages every 10 minutes for changes made to their configurations. If Security Cloud Control finds that the configuration on the device has changed, Security Cloud Control displays a "Conflict detected" configuration status for the device.
- **Synced**: If the device is in a synced state, and you click **Read All**, Security Cloud Control immediately checks the devices to determine if there have been any changes made to its configurations directly. After clicking **Read All**, Security Cloud Control confirms your intent to overwrite its copy of the device's configuration and then Security Cloud Control performs the overwrite.
- **Not Synced**: If the device is in the **Not Synced** state, and you click **Read All**, Security Cloud Control warns you that there are pending changes made to the device's configuration using Security Cloud Control

and that proceeding with the **Read All** operation will delete those changes and then overwrite Security Cloud Control's copy of the configuration with the configuration on the device.

Procedure

Step 1 Choose **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab.

Step 4 Select the devices whose configurations you want to save in Security Cloud Control.

Security Cloud Control only provides command buttons for actions that can be applied to all the selected devices.

Security Cloud Control warns you if there are configuration changes staged on Security Cloud Control for any of the devices you selected and asks if you want to continue with the bulk reading configurations action.

Step 5 Click **Read All** to continue.

Step 6 If you created and activated a change request label, remember to clear it so that you don't inadvertently associate other configuration changes with this event.

Read configuration changes from an ASA to Security Cloud Control

Why does Security Cloud Control "Read" ASA configurations?

To manage an ASA, Security Cloud Control must have its own copy of the ASAs running configuration file. Security Cloud Control reads and saves a copy of the device configuration file for the first time during device onboarding. When Security Cloud Control reads a configuration from an ASA, you can choose to **Check for Changes**, **Accept without Review**, or **Read Configuration**. For more information, refer to Reading, Discarding, Checking for, and Deploying Configuration Changes.

Security Cloud Control also needs to read an ASA configuration in these circumstances:

- When deployment of configuration changes to the ASA fails and the device state is not listed or **Not Synced**.
- When device onboarding fails and the device state is **No Config**.
- When changes are made to the device configuration outside of Security Cloud Control and those changes have not yet been polled or detected. In this case, the device state is **Synced** or **Conflict Detected**.

In these cases, Security Cloud Control needs a copy of the last known configuration stored on the device.

Read configuration changes on ASA device

Read configuration changes on your ASA device by completing these steps when prompted:

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select the device that Security Cloud Control has recently failed to onboard, or select the device where Security Cloud Control could not deploy a change.

Step 6 Click **Read Configuration** in the **Synced** pane. This option overwrites the configuration currently saved to Security Cloud Control.

Read Configuration Changes from FDM-Managed Device to Security Cloud Control

Why Does Security Cloud Control Read FDM-managed device Configurations?

In order to manage an FDM-managed device, Security Cloud Control must have its own stored copy of the FDM-managed device's configuration. When Security Cloud Control reads a configuration from an FDM-managed device, it takes a copy of the FDM-managed device's deployed configuration and saves it to its own database. The first time Security Cloud Control reads and saves a copy of the device's configuration file is when the device is onboarded. See Reading, Discarding, Checking for, and Deploying Configuration Changes for more information.

Pending and Deployed Changes

Configuration changes made to the FDM-managed device directly through the Firepower Device Manager (FDM) or its CLI are referred to as staged changes on the FDM-managed device until they are deployed. A staged, or pending, change can be edited or deleted without having any affect on traffic running through the FDM-managed device. Once the pending changes are deployed, however, they are enforced by the FDM-managed device and affect traffic running through the device.

Conflict Detected

If you enable Conflict Detection on the device, Security Cloud Control checks for configuration changes every 10 minutes. If the copy of the configuration stored on the device has changed, Security Cloud Control notifies you by displaying the "Conflict Detected" configuration status. If you do **not** have Conflict Detection enabled, or a change has been made to the device's configuration within the 10 minute interval between automatic polling, clicking **Check for Changes** prompts Security Cloud Control to immediately compare the copy of the configuration on the device with the copy of the configuration stored on Security Cloud Control. You can choose to **Review Conflict** to examine the differences between the device configuration and the configuration saved to Security Cloud Control, then select **Discard Changes** to remove the staged changes and revert to the saved configuration or confirm the changes. You can also choose to **Accept without Review**; this option takes the configuration and overwrites what is currently saved to Security Cloud Control.

Discard Changes Procedure

To discard configuration changes from the FDM-managed device, follow this procedure:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appopriate device type tab.

Step 5 Select the device whose configuration is set to Conflict Detected and gives you the link to Revert Pending Changes. The message explains that you can click the link to revert pending changes or you can log on to the device using the local manager FDM and deploy the changes first.

Caution
Clicking the Revert Pending Changes link deletes pending changes on FDM-managed device immediately. You are not given an opportunity to review the changes first.

Step 6 Review the changes on FDM before clicking Revert Pending Changes:

a. Open a browser window and enter https://<*IP_address_of_the_FTD*>.

b. Look for the deployment icon in FDM. It will have an orange circle indicating that there are changes ready to deploy .

c. Click the icon and review the pending changes:

- If the changes can be deleted, return to Security Cloud Control and click "Revert Pending Changes." At this point, the configuration on the FDM-managed device and the copy of the configuration on Security Cloud Control should be the same. You are done.
- If you want to deploy the changes to the device, click **Deploy Now**. Now the deployed configuration on the FDM-managed device and the configuration on stored on Security Cloud Control are different. You can then return to Security Cloud Control and poll the device for changes. Security Cloud Control identifies identifies that there has been a change on the FDM-managed device, and gives you an opportunity to review the conflict. See Conflict Detected-Review Conflict to resolve that state.

If Reverting Pending Changes Fails

Changes to the system databases and security feeds can't be reverted by Security Cloud Control. Security Cloud Control recognizes that there are pending changes, attempts to revert them and then fails. To determine if the revert failure is due to pending database updates or security feed updates, log into the device's FDM console. It will have an orange circle indicating that there are changes ready to deploy . Click the deploy button to review the pending changes and deploy them or discard them as is appropriate.

Review Conflict Procedure

To review configuration changes from the FDM-managed device, follow this procedure:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select the device whose configuration is marked Conflict Detected and gives you a link to **Review Conflict** in the Conflict Detected pane on the right.

Step 6 Click **Review Conflict.**

Step 7 Compare the two configurations presented to you.

Step 8 Take one of these actions:

- Click **Accept** to overwrite the last known configuration on Security Cloud Control with the one found on the device. **Note**: The entire configuration stored on Security Cloud Control will be completely overwritten by the configuration found on the device.
- Click **Reject** to reject the changes made on the device and replace them with the last known configuration on Security Cloud Control.
- Click **Cancel** to stop the action.

Note
You can prompt Security Cloud Control to immediately check a device for an out-of-band change by clicking Check for Changes while the device is in the Synced state.

Accept Without Review Procedure

To accept configuration changes from the FDM-managed device without reviewing, follow this procedure:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click the **Security Devices** tab.

Step 3 Click the appopriate device type tab.

Step 4 Select the device whose configuration is marked Conflict Detected and gives you a link to **Accept Without Review** in the Conflict Detected pane on the right.

Step 5 Click **Accept Without Review**. Security Cloud Control accepts and overwrites the current configuration.

Preview and deploy configuration changes for all devices

Security Cloud Control informs you when you have made a configuration change to a device in your organization, but you have not deployed that change, by displaying an orange dot on the deploy icon . Each device affected by these changes displays a status of "Not Synced" in the **Security Devices** page. Click **Deploy** to review which devices have pending changes and deploy the changes to those devices.

This deployment method is available for all supported devices.

You can use this deployment method for a single configuration change. Alternatively, you can wait and deploy multiple changes at once.

Procedure

Step 1 In the menu bar of Security Cloud Control click the **Deploy** button .

Step 2 Select the devices with changes you want to deploy. If a device displays a yellow caution triangle, you cannot deploy changes to that device. Hover your pointer over the yellow caution triangle to see the reason.

Step 3 (Optional) If you want to see more information about a pending change, click the **View Detailed Change log** link to open the change log associated with that change. Click the **Deploy** icon to return to the **Devices with Pending Changes** page.

Step 4 Click **Deploy Now** to deploy the changes immediately to the devices that you selected. You will see the progress in the Active jobs indicator in the Jobs tray.

Step 5 (Optional) After the deployment has finished, click **Jobs** in the Security Cloud Control navigation bar. The results of the deployment appear in a recent "Deploy Changes" job.

Step 6 If you created a change request label and have no more configuration changes to associate with it, clear the label.

Deploy configuration changes from Security Cloud Control to ASA

Why does Security Cloud Control deploy changes to an ASA?

When you manage and make changes to a device configuration with Security Cloud Control, Security Cloud Control saves those changes to its own copy of the configuration file. Those changes are considered staged on Security Cloud Control until they are deployed to the device. Staged configuration changes have no effect on the network traffic running through the device. Only after Security Cloud Control deploys the changes to the device do they have an effect on the traffic running through the device. When Security Cloud Control deploys changes to the device's configuration, it only overwrites those elements of the configuration that were changed. These actions do not overwrite the entire configuration file on your device.

The ASA has a running configuration file (sometimes called the running config) and a startup configuration file (sometimes called the startup config). The configuration stored in the running config file is enforced on traffic passing through the ASA. After you change the running config and confirm the device behaves as you want, deploy those changes to the startup config. When you reboot the ASA, it starts using the startup config as its configuration starting point. If you do not save your changes to the startup config, you lose them when you reboot the ASA.

Deploying changes from Security Cloud Control to an ASA writes those changes to the running configuration file. When you are satisfied with how those changes affect the device, deploy them to the startup configuration file.

You can start deployments for one device or several devices simultaneously. You can schedule single or recurring deployments for a device.

Some changes are deployed directly to the ASA

If you use the command line interface on Security Cloud Control to make a change to an ASA, those changes are not staged on Security Cloud Control. They are deployed directly to the running configuration of the ASA. When you make changes that way, your device remains synced with Security Cloud Control.

Deploy configuration changes

This section assumes you are using Security Cloud Control's GUI or editing the Device Configuration page to make changes to an ASA configuration file, and not using Security Cloud Control's CLI interface or CLI macro interface.

To update an ASA configuration, complete these two steps.

Procedure

Step 1 Make changes on Security Cloud Control using one of these methods:

- The Security Cloud Control GUI
- The device configuration on the **Device Configuration** page

Step 2 After you make your changes, return to the **Security Devices** page and select **Preview and Deploy...** to apply the change to the device.

Further you can:

When Security Cloud Control updates an ASA's running configuration with the one staged on Security Cloud Control or changes the configuration on Security Cloud Control with the running configuration stored on the ASA, it attempts to change only the relevant lines of the configuration file. These selective changes occur only if the configuration aspect can be managed by the Security Cloud Control GUI. If the desired configuration change cannot be made using the Security Cloud Control GUI, Security Cloud Control attempts to overwrite the entire configuration file.

Here are two examples:

- You **can** create or change a network object using the Security Cloud Control GUI. If Security Cloud Control needs to deploy that change to an ASA's configuration, it would overwrite the relevant lines of the running configuration file on the ASA when the change occurs.
- You **cannot** create a new local ASA user using the Security Cloud Control GUI but you can create one by editing the ASA's configuration on the Device Configuration page. If you add a user on the Device Configuration page, and you deploy that change to the ASA, Security Cloud Control will try to save that change to the ASA's running configuration file by overwriting the entire running configuration file.

Deploy configuration changes made using the Security Cloud Control GUI

Procedure

Step 1 When you make a configuration change using Security Cloud Control GUI and save it, the change is stored in the version of the ASA's running configuration file kept in Security Cloud Control.

Step 2 Return to the device on the **Security Devices** page.

Step 3 Click the **Devices** tab. The device status now displays **Not synced**.

Step 4 Choose one of these methods to deploy the changes.

- Click the **Deploy** icon () at the top right of the screen. A review screen appears so you can examine your changes. Select the device you modified, expand it to review the changes, and click **Deploy now** to deploy the changes.

  Note
  If you see a yellow warning triangle next to your device on the **Devices with Pending Changes** screen, you cannot deploy changes to it. Hover over the warning triangle to learn why you cannot deploy changes.

- In the **Not Synced** pane, click **Preview and Deploy...**

  a. Review the commands that will change the ASA configuration file.

  b. If you are satisfied with the commands, choose a **Configuration Recovery Preference**.

  Note
  If you choose **Let me know and I will restore the configuration manually**, click **View Manual Synchronization Instructions** before continuing.

  c. Click **Apply Changes to Device**.

  d. Click **OK** to acknowledge the success message.

Schedule automatic deployments

You can configure your tenant to deploy changes automatically either to a single device or to all devices with pending changes. For more information about the deployment scheduling feature, refer to scheduling automatic deployments.

Deploy configuration changes using Security Cloud Control's CLI interface

Procedure

Step 1 Choose **Inventory**.

Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select the device whose configuration you want to change.

Step 6 Click **>_Command Line Interface** in the **Actions** pane.

Step 7 If there are any commands in the command line interface table, click **Clear** to remove them.

Step 8 In the top box of the command line interface table, enter your commands at the command prompt. You can run a single command, several commands in a batch by entering each command on its own line, or entering a section of configuration file as a command. Here are some examples of commands you can enter in the command line interface table.

A single command creating the network object "albany"

```
object network albany
host 209.165.30.2
```

Multiple commands sent together:

```
object network albany
host 209.165.30.2
object network boston
host 209.165.40.2
object network cambridge
host 209.165.50.2
```

A section of a running configuration file entered as a command:

```
interface GigabitEthernet0/5
 nameif guest
 security-level 0
 no ip address
```

Note
Security Cloud Control does not require you to move between EXEC mode, Privileged EXEC mode, and Global Configuration mode. It interprets the command you enter in the proper context.

Step 9 After you have entered your commands, click **Send**. After Security Cloud Control has successfully deployed the changes to the ASA's running config file, you receive the message, Done!

Step 10 After you send the command, you may see the message, "Some commands may have made changes to the running config." This message includes two links.

- Click **Deploy to Disk** to save the changes made by this command, and any other change in the running config, to the ASA's startup config.
- Click **Dismiss** to dismiss the message.

Deploy configuration changes by editing the device configuration



Caution This procedure is for advanced users who are familiar with the syntax of an ASA configuration file. This method makes changes directly to the running configuration file stored on Security Cloud Control.

Procedure

Step 1	Choose **Security Devices**
Step 2	Choose **Inventory**.
Step 3	Click the appropriate device type tab.
Step 4	Select the device whose configuration you want to change.
Step 5	Click **View Configuration** in the **Actions** pane.
Step 6	Click **Edit**.
Step 7	Make your changes to the running configuration and **Save** them.
Step 8	Return to the **Security Devices** page. In the Not Synced pane, click **Preview and Deploy...**
Step 9	In the **Device Sync** pane to review the changes.
Step 10	Click **Replace Configuration** or **Apply Changes to Device** depending on the kind of change it is.

Deploy Configuration Changes for a Shared Object on Multiple Devices

Use this procedure when you are making changes to a policy or object shared by two or more devices. You can change a common policy on however many devices use it.

Procedure

Step 1	Open and edit the Policies page or the Objects page containing the shared object you want to edit.
Step 2	Review the shared device list and confirm that you want to make the changes on all the devices mentioned.
Step 3	Click **Confirm**.
Step 4	Click **Save**.
Step 5	Click the **Deploy** icon and deploy your changes to the affected devices.

Deploy Configuration Changes from Security Cloud Control to FDM-Managed Device

Why Does Security Cloud Control Deploy Changes to an FDM-Managed Device?

As you manage and make changes to a device's configuration with Security Cloud Control, Security Cloud Control saves the changes you make to its own copy of the configuration file. Those changes are considered staged on Security Cloud Control until they are deployed to the device. Staged configuration changes have no effect on the network traffic running through the device. Only after Security Cloud Control deploys the changes to the device do they have an affect on the traffic running through the device. When Security Cloud Control deploys changes to the device's configuration, it only overwrites those elements of the configuration that were changed. It does not not overwrite the entire configuration file stored on the device.

Like Security Cloud Control, FDM-managed device has the concept of pending changes and deployed changes. Pending changes on FDM-managed device are the equivalent of staged changes on Security Cloud Control. A pending change can be edited or deleted without having any affect on traffic running through the FDM-managed device. Once the pending changes are deployed, however, they are enforced by the FDM-managed device and affect traffic running through the device.

Because of FDM-managed devices two step process for editing configuration files, Security Cloud Control deploys changes to an FDM-managed device slightly differently than it does to other devices it manages. Security Cloud Control first deploys the changes to FDM-managed device and the changes are in the pending state. Then, Security Cloud Control deploys the changes on the devices and they become live. Now that the changes have been deployed, they are enforced and affect traffic running through the FDM-managed device. This applies to both standalone and high availability (HA) devices.

Deployments can be initiated for a single device or on more than one device simultaneously. You can schedule individual deployments or recurring deployments for a single device.

Two things will prevent Security Cloud Control from deploying changes to an FDM-managed device:

- If there are staged changes on the FDM-managed device. See Conflict Detected for more information on how to resolve this state.
- Security Cloud Control does not deploy changes if there are changes in the process of being deployed to the FDM-managed device.

Scheduling Automatic Deployments

You can also configure your tenant to schedule deployments to a single device with pending changes scheduling automatic deployments.

Deploy Changes to a Device

Procedure

Step 1 When you make a configuration change for a device using Security Cloud Control and save it, that change is saved in the Security Cloud Control instance of the device configuration.

Step 2 Choose **Inventory**.

Step 3 Choose **Security Devices**.

Step 4 Click the **Devices** tab.

Step 5 Click the appropriate device type tab. The configuration status of the device will display "Not synced" after you make changes.

Step 6 To deploy the changes, select one of these methods:

- Select the device and in the "Not Synced" pane, and click **Preview and Deploy**. On the Pending Changes screen, review the changes. If you are satisfied with the pending version, click **Deploy Now**.
- Click the **Deploy** icon . For more information, refer to Preview and deploy configuration changes for all devices, on page 597.

Cancelling Changes

If, when deploying a change from Security Cloud Control to a device, you click **Cancel**, the changes you made are not deployed to the device. The process is canceled. The changes you made are still pending on Security Cloud Control and can be edited further before you finally deploy them to FDM-managed device.

Discarding Changes

If, when previewing changes, you click **Discard all**, the changes you made, and any other changes any other user made but did not deploy to the device, are deleted. Security Cloud Control reverts its pending configuration to the last read or deployed configuration before any changes were made.

Bulk Deploy Device Configurations

If you have made changes to multiple devices, for instance by editing a shared object, you can apply those change to all of the affected devices at once:

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab.

Step 4 Select all of the devices for which you have made configuration changes on Security Cloud Control. These devices should show "Not Synced" status.

Step 5 Deploy the changes using one of these methods:

- Click the button at the top-right of the screen to view the **Devices with Pending Changes** window. This gives you a chance to review the pending changes on the devices you selected before you deploy them. Click **Deploy Now** to deploy the changes.

  Note
  If you see a yellow warning triangle next to a device on the **Devices with Pending Changes** screen, you cannot deploy a change to that device. Hover your mouse over the warning triangle for information about why changes cannot be deployed to that device.

- Click **Deploy All** on the details pane. Review any warnings and click **OK**. The bulk deployment starts immediately without a review of the changes.

Step 6 (Optional) Click the Jobs icon in the navigation bar to view the results of the bulk deploy.

Preview and deploy On-Premises Firewall Management Center configurations

If you have made configuration changes to an object, such as changing a value or adding an override to an object, you can deploy all those changes at once to your on-premises Firewall Management Center.

Note This task deploys configuration changes only to on-premises Firewall Management Center. To deploy these changes to your Firewall Threat Defense devices, you must deploy these changes manually from your on-premises Firewall Management Center. For more information, see Configuration Deployment in the *Cisco Secure Firewall Management Center Device Configuration Guide*.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**

Step 2 Click the **FMC** tab.

Step 3 Select the on-premises Firewall Management Center where you want to preview and deploy changes.

Note
Security Cloud Control identifies when your on-premises Firewall Management Center is out of sync and displays the status as **Not Synced**.

Step 4 Click **Preview and Deploy** on the details pane.

Step 5 Review any warnings. To deploy immediately, click **Deploy Now**. If you do not want to proceed, click **Discard All**.

Step 6 Alternatively, click the download button at the top-right corner of the screen to open the **Devices with Pending Changes** window. Select the devices, review the pending changes on the selected devices, and then deploy them.

Step 7 Click **Deploy Now** to deploy the changes.

About Scheduled Automatic Deployments

Using Security Cloud Control, you can make configuration changes to one or more of the devices it manages and then schedule the changes to be deployed to those devices at a time that is convenient for you.

If there were changes made directly to the device that have not been read to Security Cloud Control, the scheduled deployment will be skipped until that conflict is resolved. The Jobs page will list any instance where a scheduled deployment fails. If **Enable the Option to Schedule Automatic Deployments** is turned off, all scheduled deployments are deleted.

Caution If you schedule a new deployment for multiple devices, and some of those devices already have deployments scheduled, the new scheduled deployment overwrites the existing scheduled deployments.

Note When you create a scheduled deployment, the schedule is created in your local time, not in the time zone of the device. Scheduled deployments *do not* automatically adjust for daylight savings time.

Enable scheduled automatic deployments

Enabling the option to schedule automatic deployments allows you to schedule future deployments at a date and time when it is convenient. Once you enable this option, you can schedule a single automatic deployment or set up recurring automatic deployments.

Changes you make on Security Cloud Control for a device are not automatically deployed to the device if it has pending changes . If a device is not in the **Synced** state, such as **Conflict Detected** or **Not Synced**, scheduled deployments are not executed. The jobs page lists any instance where a scheduled deployment fails.

If you turn off **Enable the Option to Schedule Automatic Deployments**, all scheduled deployments are deleted.

Important If you use Security Cloud Control to create more than one scheduled deployment for a device, the new deployment overwrites the existing deployment. If you create more than one scheduled deployment for a device using the API, you **must** delete the existing deployment before scheduling the new deployment.

Follow these steps to enable scheduled automatic deployments:

Procedure

Step 1 Choose **Settings** > **General Settings**.

Step 2 Choose **Administration** > **General Settings**.

Step 3 Turn on the **Enable the option to schedule automatic deployments** toggle button to enable it.

Schedule an Automatic Deployment

The deployment schedule can be a single event or a recurring event. You may find recurring automatic deployments a convenient way to line up recurring deployments with your maintenance window. Follow this procedure to schedule a one-time or a recurring deployment for a single device.

Important This procedure applies only to ASAs and FDM-managed devices.

To schedule deployments for Secure Firewall Threat Defense devices managed by on-premises Firewall Management Center or Cloud-Delivered Firewall Management Center, see Scheduling.

Note If you schedule a deployment for a device that has an existing deployment scheduled, the new scheduled deployment overwrites the existing deployment.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 From the Security Cloud Control home page, choose **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select one ore more devices.

Step 6 In the Device Details pane, locate the Scheduled Deployments tab and click **Schedule**.

Step 7 Select when the deployment should occur.

- For a one-time deployment, click the **Once on** option to select a date and time from the calendar.
- For a recurring deployment, click the **Every** option. You can choose either a daily or once a week deployment. Select the **Day** and **Time** the deployment should occur.

Step 8 Click **Save**.

Edit a Scheduled Deployment

Follow this procedure to edit a scheduled deployment:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 From the Security Cloud Control home page, choose **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select one or more devices.

Step 6 In the **Device Details** pane, locate the Scheduled Deployments tab and click **Edit** .



Step 7 Edit the recurrence, date, or time of a scheduled deployment.

Step 8 Click **Save**.

Delete a Scheduled Deployment

Follow this procedure to delete a scheduled deployment:

Note If you schedule a deployment for multiple devices, and then change or delete the schedule for some of the devices, the original scheduled deployment for the remaining devices will be preserved.

Procedure

Step 1 Choose **Inventory**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab.

Step 4 Select one or more devices.

Step 5 In the **Device Details** pane, locate the **Scheduled Deployments** tab and click **Delete** .

- Reading, Discarding, Checking for, and Deploying Configuration Changes
- Read All Device Configurations, on page 592
- Deploy configuration changes from Security Cloud Control to ASA, on page 597
- Deploy Configuration Changes from Security Cloud Control to FDM-Managed Device, on page 601
- Preview and deploy configuration changes for all devices, on page 597

Check for Configuration Changes

Check for Changes to determine if the device's configuration has been changed directly on the device and it is no longer the same as the copy of the configuration stored on Security Cloud Control. You will see the this option when the device is in the "Synced" state.

To check changes:

Procedure

Step 1 From the Security Cloud Control home page, choose **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab.

Step 4 Select the device, whose configuration you suspect may have been changed directly on the device.

Step 5 Click **Check for Changes** in the Synced pane on the right.

Step 6 The behavior that follows is slightly different depending on the device:

- For FTD device if there has been a change to the device's configuration, you will receive the message:

```
Reading the policy from the device. If there are active deployments on the device,
reading will start after they are finished.
```

- Click **OK** to continue. The configuration on the device will overwrite the stored configuration on Security Cloud Control.
- Click **Cancel** to cancel the action.

- For ASA device:

a. Compare the two configurations presented to you. Click **Continue**. The configuration labeled **Last Known Device Configuration** is the configuration stored on Security Cloud Control. The configuration labeled **Found on Device** is the configuration saved on the ASA.

b. Select either:

1. **Reject** the out-of-band changes to keep the "Last Known Device Configuration."
2. **Accept** the out-of-band changes to overwrite the device's configuration stored in Security Cloud Control with the configuration found on the device.

c. Click **Continue**.

Discard Configuration Changes

Click **Discard Changes** when you want to "undo" all the *undeployed* configuration changes you made to a device's configuration using Security Cloud Control. When you click **Discard Changes**, Security Cloud Control *completely overwrites* its local copy of a device's configuration with the configuration stored on the device.

When you click **Discard Changes**, your device's configuration status is in a **Not Synced** state. After you discard your changes, the copy of the configuration on Security Cloud Control will be the same as the copy of the configuration on the device and the configuration status in Security Cloud Control will return to Synced.

To discard, or "undo," all of your undeployed configuration changes for a device:

Procedure

Step 1 From the Security Cloud Control home page, choose **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab.

Step 4 Select the device you have been making configuration changes to.

Step 5 Click **Discard Changes** in the **Not Synced** pane on the right.

- For FDM-managed devices-Security Cloud Control warns you that "Pending changes on Security Cloud Control will be discarded and the Security Cloud Control configuration for this device will be replaced with the configuration currently running on the device." Click **Continue** to discard your changes.

Discard On-Premises Firewall Management Center configuration changes

To undo all configuration changes you made in Security Cloud Control, such as changes to objects shared between your Security Cloud Control and on-premises Firewall Management Center, follow this procedure. When you perform this task, Security Cloud Control *completely overwrites* its local configuration copy with the configuration stored on the device.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**.

Step 2 Click the **FMC** tab.

Step 3 Select the on-premises Firewall Management Center for which you want to discard changes.

Step 4 Click **Discard Changes** in the **Not Synced** pane.

When you click **Discard Changes**, your on-premises Firewall Management Center configuration status changes to **Not Synced**. After you discard your changes, the configuration copy stored in Security Cloud Control matches the configuration on on-premises Firewall Management Center. The status in Security Cloud Control then returns to **Synced**.

Out-of-Band Changes on Devices

Out-of-band changes refer to changes made directly on the device without using Security Cloud Control. These changes may be made using the device's command-line interface over an SSH connection or by using a local manager like the Adaptive Security Device Manager (ASDM) for the ASA, the FDM for the FDM-managed device, or for an On-Premises Firewall Management Center on the On-Premises Firewall Management Center user interface. An out-of-band change causes a conflict between the device's configuration stored on Security Cloud Control and the configuration stored on the device itself.

Detecting Out-of-Band Changes on Devices

If Conflict Detection is enabled for an ASA, or an FDM-managed device, a Cisco IOS device, or an On-Premises Firewall Management Center, Security Cloud Control checks the device every 10 minutes searching for any new changes made directly to the device's configuration outside of Security Cloud Control.

If Security Cloud Control finds that there are changes to the device's configuration that are not stored on Security Cloud Control, it changes the **Configuration Status** of that device to the "Conflict Detected" state.

When Security Cloud Control detects a conflict, one of two conditions is likely:

- There have been configuration changes made to the device directly that have not been saved to Security Cloud Control's database.
- In the case of an FDM-managed device, there may be "pending" configuration changes on the FDM-managed device that have not been deployed.
- In the case of an On-Premises Firewall Management Center, there may be changes made, for instance, to objects outside Security Cloud Control, which are pending to be synchronized with Security Cloud Control or changes made in Security Cloud Control which are pending to be deployed to the On-Premises Firewall Management Center.

Synchronizing configurations between Security Cloud Control and device

About configuration conflicts

In the **Security Devices** page, you may see devices or services have the status "Synced," "Not Synced," or "Conflict Detected." To know the status of an On-Premises Firewall Management Center that you manage using Security Cloud Control, navigate **Administration** > **Integrations** > **Firewall Management Center**.

- When a device is **Synced**, the configuration on Security Cloud Control) and the configuration stored locally on the device are the same.
- When a device is **Not Synced**, the configuration stored in Security Cloud Control was changed and it is now different that the configuration stored locally on the device. Deploying your changes from Security Cloud Control to the device changes the configuration on the device to match Security Cloud Control's version.
- Changes made to devices outside of Security Cloud Control are called **out-of-band changes**. When out-of-band changes are made, you'll see the device state change to "Conflict Detected," if conflict detection is enabled for the device. Accepting the out-of-band changes, changes the configuration on Security Cloud Control to match the configuration on the device.

Conflict Detection

When conflict detection is enabled, Security Cloud Control polls the device for the default interval to to determine if a change has been made to the device's configuration outside of Security Cloud Control. If Security Cloud Control detects that a change was made, it changes the configuration status for the device to **Conflict Detected**. Changes made to a device outside of Security Cloud Control are called "out-of-band" changes.

In the case of an On-Premises Firewall Management Center that is managed by Security Cloud Control, if there are changes that are staged and the device is in **Not Synced** state, Security Cloud Control stops polling the device to check for changes. When there are changes made outside Security Cloud Control which are pending to be synchronized with Security Cloud Control and changes made in Security Cloud Control which are pending to be deployed to the on-premises Firewall Management Center, Security Cloud Control declares the on-premises Firewall Management Center to be in the **Conflict Detected** state.

Once this option is enabled, you can configure how often conflicts or OOB changes are detected per device. See Schedule polling for device changes, on page 614 for more information.

Enable Conflict Detection

Enabling conflict detection alerts you to instances where changes have been made to a device outside of Security Cloud Control.

Procedure

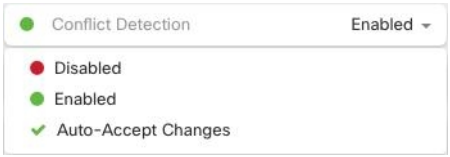
Step 1 Choose **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Select the appropriate device type tab.

Step 4 Select the device or devices for which you want to enable conflict detection.

Step 5 In the **Conflict Detection** box at the right of the device table, select **Enabled** from the list.



Enable conflict detection for an On-Premises Firewall Management Center

Enabling conflict detection for an on-premises Firewall Management Center keeps you informed when there are changes made outside Security Cloud Control that are pending synchronization with Security Cloud Control, and when there are changes made in Security Cloud Control that are pending deployment to on-premises Firewall Management Center.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**.

Step 2 From the list, select the on-premises Firewall Management Center for which you want to enable conflict detection.

Step 3 In the **Conflict Detection** box on the right pane, select **Enabled** from the list.

Note
Unlike other devices managed by Security Cloud Control, for an on-premises Firewall Management Center, you can either enable or disable conflict detection; you cannot opt to auto-accept changes.

Automatically Accept Out-of-Band Changes from your Device

You can configure Security Cloud Control to automatically accept any change made directly to a managed device by enabling auto-accept changes. Changes made directly to a device without using Security Cloud

Control are referred to as out-of-band changes. An out-of-band change creates a *conflict* between the device's configuration stored on Security Cloud Control and the configuration stored on the device itself.

The auto-accept changes feature is an enhancement to conflict detection. If you have auto-accept changes enabled on your device, Security Cloud Control checks for changes every 10 minutes to determine if there have been any out-of-band changes made to the device's configuration. If there have been configuration changes, Security Cloud Control automatically updates its local version of the device's configuration without prompting you.

Security Cloud Control will ***not*** automatically accept a configuration change if there are configuration changes made on Security Cloud Control that have not yet been deployed to the device. Follow the prompts on the screen to determine your next action.

To use auto-accept changes, you first enable the tenant to display the auto-accept option in the Conflict Detection menu on the **Security Devices** page; then, you enable auto-accept changes for individual devices. For on-premises Firewall Management Center, you can do this from the **Services** page by navigating **Administration** > **Integrations** > **Firewall Management Center** and selecting the FMC.

If you want Security Cloud Control to detect out-of-band changes but give you the option to accept or reject them manually, enable Conflict Detection, on page 610 instead.

Configure Auto-Accept Changes

Procedure

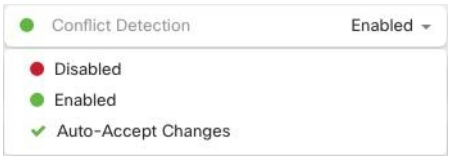
Step 1 Log in to Security Cloud Control using an account with Admin or Super Admin privileges.

Step 2 Choose **Settings** > **General SettingsAdministration** > **General Settings**.

Step 3 In the **Tenant Settings** area, click the toggle to **Enable the option to auto-accept device changes**. This enables the Auto-Accept Changes menu option to appear in the Conflict Detection menu on the **Security Devices** page.

Step 4 In the left pane, click **Security Devices** and select the device for which you want to automatically accept out-of-band changes.

Step 5 In the **Conflict Detection** menu, select **Auto-Accept Changes** in the drop-down menu.



Disabling Auto-Accept Changes for All Devices on the Tenant

Procedure

Step 1 Log-in to Security Cloud Control using an account with Admin or Super Admin privileges.

Step 2 Choose **Settings** > **General SettingsAdministration** > **General Settings**.

Step 3 In the **Tenant Settings** area, disable the "**Enable the option to auto-accept device changes**" by sliding the toggle to the left so it shows a grey X. This disables Auto-Accept Changes option in the Conflict Detection menu and disables the feature for every device on your tenant.

Note
Disabling "Auto-Accept" will require you to review each device conflict before you can accept it into Security Cloud Control. This includes devices previously configured to auto-accept changes.

Resolve configuration conflicts

This section explains how to resolve configuration conflicts that occur on the device.

Resolve the Not Synced Status

Use the following procedure to resolve a device with a "Not Synced" Configuration Status:

Procedure

Step 1 Choose **Inventory**.

Note
For an On-Premises Firewall Management Center, navigate **Tools & Services** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device reported as Not Synced.

Step 6 In the **Not synced** panel to the right, select either of the following:

- **Preview and Deploy...** -If you want to push the configuration change from Security Cloud Control to the device, preview and deploy the changes you made now, or wait and deploy multiple changes at once.
- **Discard Changes** -If you do **not** want to push the configuration change from Security Cloud Control to the device, or you want to "undo" the configuration changes you started making on Security Cloud Control. This option overwrites the configuration stored in Security Cloud Control with the running configuration stored on the device.

Resolve the conflict detected status

Security Cloud Control allows you to enable or disable conflict detection on each live device. If Conflict Detection, on page 610 is enabled and there was a change made to the device's configuration without using Security Cloud Control, the device's configuration status will show **Conflict Detected**.

To resolve a **Conflict Detected** status, follow this procedure:

Procedure

Step 1 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the appropriate device type tab.

Step 4 Select the device reporting the conflict and click **Review Conflict** in the details pane on the right.

Step 5 In the **Device Sync** page, compare the two configurations by reviewing the highlighted differences.

- The panel labeled "Last Known Device Configuration" is the device configuration stored on Security Cloud Control.
- The panel labeled "Found on Device" is the configuration stored in the running configuration on the ASA.

Step 6 Resolve the conflict by selecting one of the following:

- **Accept Device changes**: This will overwrite the configuration **and any pending changes stored on** Security Cloud Control with the device's running configuration.

  Note
  As Security Cloud Control does not support deploying changes to the Cisco IOS devices outside of the command line interface, your only choice for a Cisco IOS device will be to select **Accept Without Review** when resolving the conflict.

- **Reject Device Changes**: This will overwrite the configuration stored on the device with the configuration stored on Security Cloud Control.

Note
All configuration changes, rejected or accepted, are recorded in the change log.

Schedule polling for device changes

If you enable Conflict Detection, on page 610 or **Enable the option to auto-accept device changes** from the **Settings** page, Security Cloud Control polls the device at the default interval to check for configuration changes

made outside Security Cloud Control. You can set how often Security Cloud Control polls for changes for each device. This customization can be applied to multiple devices.

If you do not configure a selection for a device, the interval is automatically configured for "tenant default".

After you enable **Conflict Detection** from the **Security Devices** page or **Enable the option to auto-accept device changes** from the **Settings** page, you can schedule how often Security Cloud Control polls your devices with this procedure.

Procedure

Step 1 Choose **Inventory**.

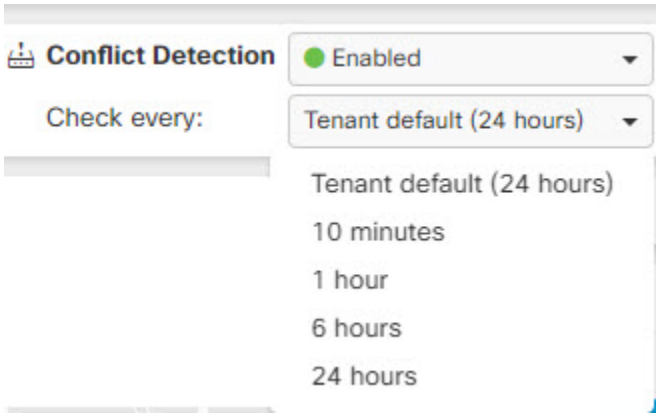
Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate your device.

Step 4 Click the appropriate device type tab.

Step 5 Select the devices where you want to enable conflict detection.

Step 6 Next to **Conflict Detection**, click the drop-down menu for **Check every** and select the polling interval you want.



Schedule a Security Database Update

This section provides information about scheduling a security database update on the device.

Create a Scheduled Security Database Update

Use the following procedure to create a scheduled task to check and update the security databases for an FDM-managed device:

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 Click the **Devices** tab to locate your device.

Step 4 Click the **FTD** tab.

Step 5 Select a device.

Step 6 In the **Actions** pane, locate the **Security Database Updates** section and click the**add +** button.

Note

If there is an existing scheduled task for the selected device, click the edit icon to create a new task. Creating a new task will overwrite the existing one.

Step 7 Configure the scheduled task with the following:

- **Frequency** . Choose for the update to occur daily, weekly, or monthly.
- **Time**. Choose the time of day. Note that the time displayed is UTC.
- **Select Days.** Choose which day(s) of the week you want the update to occur.

Step 8 Click **Save**.

The device's Configuration Status will change to "Updating Databases".

Edit a Scheduled Security Database Update

Use the following procedure to edit an existing scheduled task to check and update the security databases for an FDM-managed device.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the **FTD** tab.

Step 4 Select a device.

Step 5 In the **Actions** pane, locate the **Security Database Updates** section and click the edit icon .

Step 6 Edit the scheduled task with the following:

- **Frequency** . Choose for the update to occur daily, weekly, or monthly.
- **Time**. Choose the time of day. Note that the time displayed is UTC.
- **Select Days.** Choose which day(s) of the week you want the update to occur.

Step 7 Click **Save**.

Step 8 The device's Configuration Status will change to "Updating Databases".

Update FDM-Managed Device Security Databases

By updating the security databases on an FDM-managed device, you are updating the following: SRUs (intrusion rules), security intelligence (SI), vulnerability databases (VDB), and geolocation databases. If you opt into updating the security databases through the Security Cloud Control UI, note that **all** of the mentioned databases are updated; you cannot select which databases you want to update.

Please note that security database updates cannot be reverted.



Note When you update the security databases, some packets may be dropped or pass uninspected. We recommend you schedule your security database updates during a maintenance window.

Update FDM-Managed Device Security Database While Onboarding

When you onboard an FDM-managed device to Security Cloud Control, part of the onboarding process allows you to **Enable scheduled recurring updates for databases**. This option is checked by default. When enabled, Security Cloud Control immediately checks for and applies any security updates as well as automatically schedules the device to check for additional updates. You are able to modify the date and time of the scheduled task after the device is onboarded.

Update FDM-Managed Device Security Database After Onboarding

After an FDM-managed device is onboarded to Security Cloud Control, you can configure a device to check for security database updates by scheduling an update. You can modify this scheduled task at any time by selecting the device the update is scheduled for. See Schedule a Security Database Update for more information.

Workflows

Device licenses

Security Cloud Control cannot update the security databases if there is no license. We recommend that your FDM-managed device has at least an license.

If you are onboarding a device that has no license, this does not inhibit Security Cloud Control from onboarding the device. Instead, the device will experience a **Connectivity** status of "insufficient licenses". To resolve this issue, you must apply the correct licenses through the FDM-managed device UI.



Note If you onboard an FDM-managed device and opt in to schedule future security database updates and the device does **not** have a registered license, Security Cloud Control still creates the scheduled task but does not trigger the task until the appropriate licenses have been applied and the device is successfully synchronized.

Security database updates are pending in FDM

If you update the security databases through the FDM-managed device UI, and you have **conflict detection** enabled on your device, Security Cloud Control detects the pending update as a conflict.

Note If you onboard your FDM-managed device and opt to schedule the updates, Security Cloud Control automatically updates the security databases as well as any other pending changes to the stored configuration during the next deploy. **does not have to be a configuration deploy**

Device has OOB changes, or staged changes, during a security database update

If you schedule a security database update for an FDM-managed device that has out of band (OOB) changes, or staged changes that have not been deployed, Security Cloud Control only checks and updates the security databases. Security Cloud Control does **not** deploy OOB or staged changes.

Device already has a scheduled task to update the security databases

Each device can only have one scheduled task. If the device already has a scheduled task to update the security databases, creating a new one overwrites it. This applies to tasks that are created in either Security Cloud Control or an FDM-managed device.

No security database updates available

If there are no updates available, Security Cloud Control does not deploy anything to the device.

Security database updates for FDM-managed High Availability (HA) pair

Security database updates are applied only to the primary device of an HA pair.

Synchronizing configurations between Security Cloud Control and device

About configuration conflicts

In the **Security Devices** page, you may see devices or services have the status "Synced," "Not Synced," or "Conflict Detected." To know the status of an On-Premises Firewall Management Center that you manage using Security Cloud Control, navigate **Administration** > **Integrations** > **Firewall Management Center**.

- When a device is **Synced**, the configuration on Security Cloud Control) and the configuration stored locally on the device are the same.
- When a device is **Not Synced**, the configuration stored in Security Cloud Control was changed and it is now different that the configuration stored locally on the device. Deploying your changes from Security Cloud Control to the device changes the configuration on the device to match Security Cloud Control's version.
- Changes made to devices outside of Security Cloud Control are called **out-of-band changes**. When out-of-band changes are made, you'll see the device state change to "Conflict Detected," if conflict detection is enabled for the device. Accepting the out-of-band changes, changes the configuration on Security Cloud Control to match the configuration on the device.

Conflict Detection

When conflict detection is enabled, Security Cloud Control polls the device for the default interval to to determine if a change has been made to the device's configuration outside of Security Cloud Control. If Security Cloud Control detects that a change was made, it changes the configuration status for the device to **Conflict Detected**. Changes made to a device outside of Security Cloud Control are called "out-of-band" changes.

In the case of an On-Premises Firewall Management Center that is managed by Security Cloud Control, if there are changes that are staged and the device is in **Not Synced** state, Security Cloud Control stops polling the device to check for changes. When there are changes made outside Security Cloud Control which are pending to be synchronized with Security Cloud Control and changes made in Security Cloud Control which are pending to be deployed to the on-premises Firewall Management Center, Security Cloud Control declares the on-premises Firewall Management Center to be in the **Conflict Detected** state.

Once this option is enabled, you can configure how often conflicts or OOB changes are detected per device. See Schedule polling for device changes, on page 614 for more information.

Enable Conflict Detection

Enabling conflict detection alerts you to instances where changes have been made to a device outside of Security Cloud Control.

Procedure

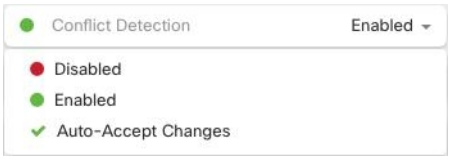
Step 1 Choose **Security Devices**.

Step 2 Click the **Devices** tab.

Step 3 Select the appropriate device type tab.

Step 4 Select the device or devices for which you want to enable conflict detection.

Step 5 In the **Conflict Detection** box at the right of the device table, select **Enabled** from the list.



Enable conflict detection for an On-Premises Firewall Management Center

Enabling conflict detection for an on-premises Firewall Management Center keeps you informed when there are changes made outside Security Cloud Control that are pending synchronization with Security Cloud Control, and when there are changes made in Security Cloud Control that are pending deployment to on-premises Firewall Management Center.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Management CenterAdministration** > **Integrations** > **Firewall Management Center**.

Step 2 From the list, select the on-premises Firewall Management Center for which you want to enable conflict detection.

Step 3 In the **Conflict Detection** box on the right pane, select **Enabled** from the list.

Note
Unlike other devices managed by Security Cloud Control, for an on-premises Firewall Management Center, you can either enable or disable conflict detection; you cannot opt to auto-accept changes.

Automatically Accept Out-of-Band Changes from your Device

You can configure Security Cloud Control to automatically accept any change made directly to a managed device by enabling auto-accept changes. Changes made directly to a device without using Security Cloud Control are referred to as out-of-band changes. An out-of-band change creates a *conflict* between the device's configuration stored on Security Cloud Control and the configuration stored on the device itself.

The auto-accept changes feature is an enhancement to conflict detection. If you have auto-accept changes enabled on your device, Security Cloud Control checks for changes every 10 minutes to determine if there have been any out-of-band changes made to the device's configuration. If there have been configuration changes, Security Cloud Control automatically updates its local version of the device's configuration without prompting you.

Security Cloud Control will ***not*** automatically accept a configuration change if there are configuration changes made on Security Cloud Control that have not yet been deployed to the device. Follow the prompts on the screen to determine your next action.

To use auto-accept changes, you first enable the tenant to display the auto-accept option in the Conflict Detection menu on the **Security Devices** page; then, you enable auto-accept changes for individual devices. For on-premises Firewall Management Center, you can do this from the **Services** page by navigating **Administration** > **Integrations** > **Firewall Management Center** and selecting the FMC.

If you want Security Cloud Control to detect out-of-band changes but give you the option to accept or reject them manually, enable Conflict Detection, on page 610 instead.

Configure Auto-Accept Changes

Procedure

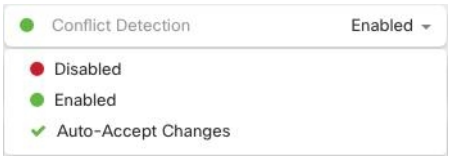
Step 1 Log in to Security Cloud Control using an account with Admin or Super Admin privileges.

Step 2 Choose **Settings** > **General SettingsAdministration** > **General Settings**.

Step 3 In the **Tenant Settings** area, click the toggle to **Enable the option to auto-accept device changes**. This enables the Auto-Accept Changes menu option to appear in the Conflict Detection menu on the **Security Devices** page.

Step 4 In the left pane, click **Security Devices** and select the device for which you want to automatically accept out-of-band changes.

Step 5 In the **Conflict Detection** menu, select **Auto-Accept Changes** in the drop-down menu.



Disabling Auto-Accept Changes for All Devices on the Tenant

Procedure

Step 1 Log-in to Security Cloud Control using an account with Admin or Super Admin privileges.

Step 2 Choose **Settings** > **General SettingsAdministration** > **General Settings**.

Step 3 In the **Tenant Settings** area, disable the "**Enable the option to auto-accept device changes**" by sliding the toggle to the left so it shows a grey X. This disables Auto-Accept Changes option in the Conflict Detection menu and disables the feature for every device on your tenant.

Note
Disabling "Auto-Accept" will require you to review each device conflict before you can accept it into Security Cloud Control. This includes devices previously configured to auto-accept changes.

Resolve configuration conflicts

This section explains how to resolve configuration conflicts that occur on the device.

Resolve the Not Synced Status

Use the following procedure to resolve a device with a "Not Synced" Configuration Status:

Procedure

Step 1 Choose **Inventory**.

Note
For an On-Premises Firewall Management Center, navigate **Tools & Services** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device reported as Not Synced.

Step 6 In the **Not synced** panel to the right, select either of the following:

- **Preview and Deploy...** -If you want to push the configuration change from Security Cloud Control to the device, preview and deploy the changes you made now, or wait and deploy multiple changes at once.
- **Discard Changes** -If you do **not** want to push the configuration change from Security Cloud Control to the device, or you want to "undo" the configuration changes you started making on Security Cloud Control. This option overwrites the configuration stored in Security Cloud Control with the running configuration stored on the device.

Resolve the conflict detected status

Security Cloud Control allows you to enable or disable conflict detection on each live device. If Conflict Detection, on page 610 is enabled and there was a change made to the device's configuration without using Security Cloud Control, the device's configuration status will show **Conflict Detected**.

To resolve a **Conflict Detected** status, follow this procedure:

Procedure

Step 1 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the appropriate device type tab.

Step 4 Select the device reporting the conflict and click **Review Conflict** in the details pane on the right.

Step 5 In the **Device Sync** page, compare the two configurations by reviewing the highlighted differences.

- The panel labeled "Last Known Device Configuration" is the device configuration stored on Security Cloud Control.
- The panel labeled "Found on Device" is the configuration stored in the running configuration on the ASA.

Step 6 Resolve the conflict by selecting one of the following:

- **Accept Device changes**: This will overwrite the configuration **and any pending changes stored on** Security Cloud Control with the device's running configuration.

  Note
  As Security Cloud Control does not support deploying changes to the Cisco IOS devices outside of the command line interface, your only choice for a Cisco IOS device will be to select **Accept Without Review** when resolving the conflict.

- **Reject Device Changes**: This will overwrite the configuration stored on the device with the configuration stored on Security Cloud Control.

Note
All configuration changes, rejected or accepted, are recorded in the change log.

Schedule polling for device changes

If you enable Conflict Detection, on page 610 or **Enable the option to auto-accept device changes** from the **Settings** page, Security Cloud Control polls the device at the default interval to check for configuration changes made outside Security Cloud Control. You can set how often Security Cloud Control polls for changes for each device. This customization can be applied to multiple devices.

If you do not configure a selection for a device, the interval is automatically configured for "tenant default".

After you enable **Conflict Detection** from the **Security Devices** page or **Enable the option to auto-accept device changes** from the **Settings** page, you can schedule how often Security Cloud Control polls your devices with this procedure.

Procedure

Step 1 Choose **Inventory**.

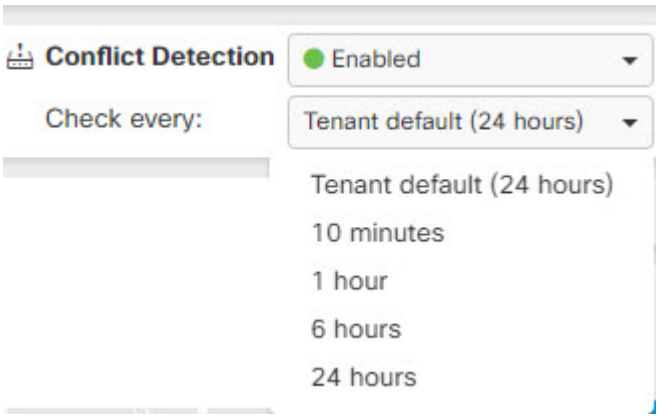
Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab to locate your device.

Step 4 Click the appropriate device type tab.

Step 5 Select the devices where you want to enable conflict detection.

Step 6 Next to **Conflict Detection**, click the drop-down menu for **Check every** and select the polling interval you want.



Schedule a Security Database Update

This section provides information about scheduling a security database update on the device.

Create a Scheduled Security Database Update

Use the following procedure to create a scheduled task to check and update the security databases for an FDM-managed device:

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the navigation bar, click **Security Devices**.

Step 3 Click the **Devices** tab to locate your device.

Step 4 Click the **FTD** tab.

Step 5 Select a device.

Step 6 In the **Actions** pane, locate the **Security Database Updates** section and click the**add +** button.

Note

If there is an existing scheduled task for the selected device, click the edit icon to create a new task. Creating a new task will overwrite the existing one.

Step 7 Configure the scheduled task with the following:

- **Frequency** . Choose for the update to occur daily, weekly, or monthly.
- **Time**. Choose the time of day. Note that the time displayed is UTC.
- **Select Days.** Choose which day(s) of the week you want the update to occur.

Step 8 Click **Save**.

The device's Configuration Status will change to "Updating Databases".

Edit a Scheduled Security Database Update

Use the following procedure to edit an existing scheduled task to check and update the security databases for an FDM-managed device.

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the **FTD** tab.

Step 4 Select a device.

Step 5 In the **Actions** pane, locate the **Security Database Updates** section and click the edit icon .

Step 6 Edit the scheduled task with the following:

- **Frequency** . Choose for the update to occur daily, weekly, or monthly.
- **Time**. Choose the time of day. Note that the time displayed is UTC.
- **Select Days.** Choose which day(s) of the week you want the update to occur.

Step 7 Click **Save**.

Step 8 The device's Configuration Status will change to "Updating Databases".

Update FDM-Managed Device Security Databases

By updating the security databases on an FDM-managed device, you are updating the following: SRUs (intrusion rules), security intelligence (SI), vulnerability databases (VDB), and geolocation databases. If you opt into updating the security databases through the Security Cloud Control UI, note that **all** of the mentioned databases are updated; you cannot select which databases you want to update.

Please note that security database updates cannot be reverted.

Note When you update the security databases, some packets may be dropped or pass uninspected. We recommend you schedule your security database updates during a maintenance window.

Update FDM-Managed Device Security Database While Onboarding

When you onboard an FDM-managed device to Security Cloud Control, part of the onboarding process allows you to **Enable scheduled recurring updates for databases**. This option is checked by default. When enabled,

Security Cloud Control immediately checks for and applies any security updates as well as automatically schedules the device to check for additional updates. You are able to modify the date and time of the scheduled task after the device is onboarded.

Update FDM-Managed Device Security Database After Onboarding

After an FDM-managed device is onboarded to Security Cloud Control, you can configure a device to check for security database updates by scheduling an update. You can modify this scheduled task at any time by selecting the device the update is scheduled for. See Schedule a Security Database Update for more information.

Workflows

Device licenses

Security Cloud Control cannot update the security databases if there is no license. We recommend that your FDM-managed device has at least an license.

If you are onboarding a device that has no license, this does not inhibit Security Cloud Control from onboarding the device. Instead, the device will experience a **Connectivity** status of "insufficient licenses". To resolve this issue, you must apply the correct licenses through the FDM-managed device UI.



Note If you onboard an FDM-managed device and opt in to schedule future security database updates and the device does **not** have a registered license, Security Cloud Control still creates the scheduled task but does not trigger the task until the appropriate licenses have been applied and the device is successfully synchronized.

Security database updates are pending in FDM

If you update the security databases through the FDM-managed device UI, and you have **conflict detection** enabled on your device, Security Cloud Control detects the pending update as a conflict.



Note If you onboard your FDM-managed device and opt to schedule the updates, Security Cloud Control automatically updates the security databases as well as any other pending changes to the stored configuration during the next deploy. **does not have to be a configuration deploy**

Device has OOB changes, or staged changes, during a security database update

If you schedule a security database update for an FDM-managed device that has out of band (OOB) changes, or staged changes that have not been deployed, Security Cloud Control only checks and updates the security databases. Security Cloud Control does **not** deploy OOB or staged changes.

Device already has a scheduled task to update the security databases

Each device can only have one scheduled task. If the device already has a scheduled task to update the security databases, creating a new one overwrites it. This applies to tasks that are created in either Security Cloud Control or an FDM-managed device.

No security database updates available

If there are no updates available, Security Cloud Control does not deploy anything to the device.

Security database updates for FDM-managed High Availability (HA) pair

Security database updates are applied only to the primary device of an HA pair.



CHAPTER 20

Use the Security Cloud Control Command Line Interface Tool (CLI)

You can use the Command Line Interface tool for managing or troubleshooting devices. The commands supported with this tool depend on the type of device. For the ASA, for example, you can use the full CLI. But for the Firewall Threat Defense, command support is limited to select **show** commands.

You can send commands to a single device or to multiple devices simultaneously.

See the following supported device types:

- ASA

  Commands are entered directly in global configuration mode. For detailed ASA CLI documentation, see ASA Command Line Interface Documentation, on page 361.

- Cloud-Delivered Firewall Management Center-managed Firewall Threat Defense

  Your command will be sent to either the Firewall Threat Defense CLI or the diagnostic CLI, depending on which command it is. Supported commands for Firewall Threat Defense are shown onscreen. These commands are a subset of commands that you can enter at the CLI. In addition, you cannot filter **show** command by piping the output (|) like you can directly at the CLI or in the Threat Defense CLI tool in the Cloud-Delivered Firewall Management Center.

  For diagnostic CLI output, see the ASA command reference guide.

  For Firewall Threat Defense CLI documentation, see Cisco Firepower Threat Defense Command Reference.

- FDM-managed Firewall Threat Defense

  Commands are entered at the Firewall Threat Defense CLI. You cannot access other modes. For Firewall Threat Defense CLI documentation, see Cisco Firepower Threat Defense Command Reference.

- Cisco IOS

  Commands are entered in user EXEC mode. You need to enter **enable** followed by **configure terminal** to execute them in Global Configuration mode. For Cisco IOS CLI documentation, see Networking Software (IOS & NX-OS) for your IOS version.

- SSH

- Use the Command Line Interface on a single device, on page 630
- Use the bulk Command Line Interface, on page 632

• Run a CLI macro, on page 635
• Export Command Line Interface results, on page 638

Use the Command Line Interface on a single device

When you select a single device, you can enter one or more commands. You can also view and use command history to rerun a set of commands.

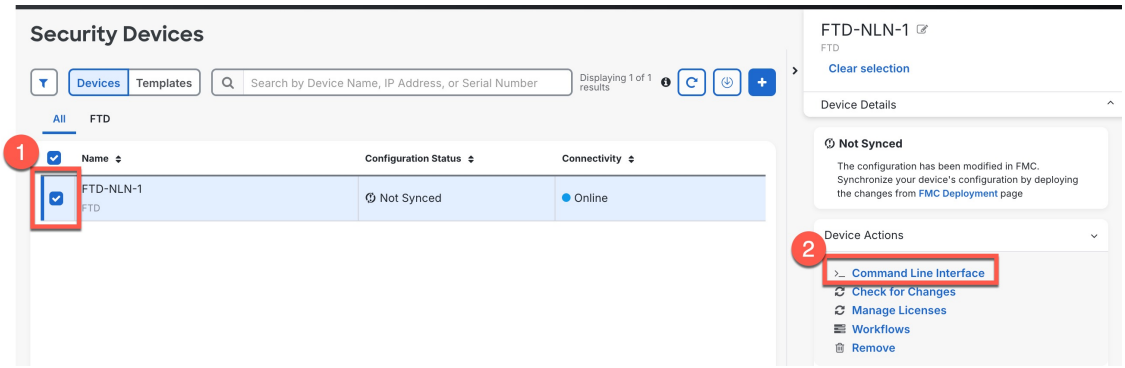
Procedure

Step 1 Choose **Inventory**.

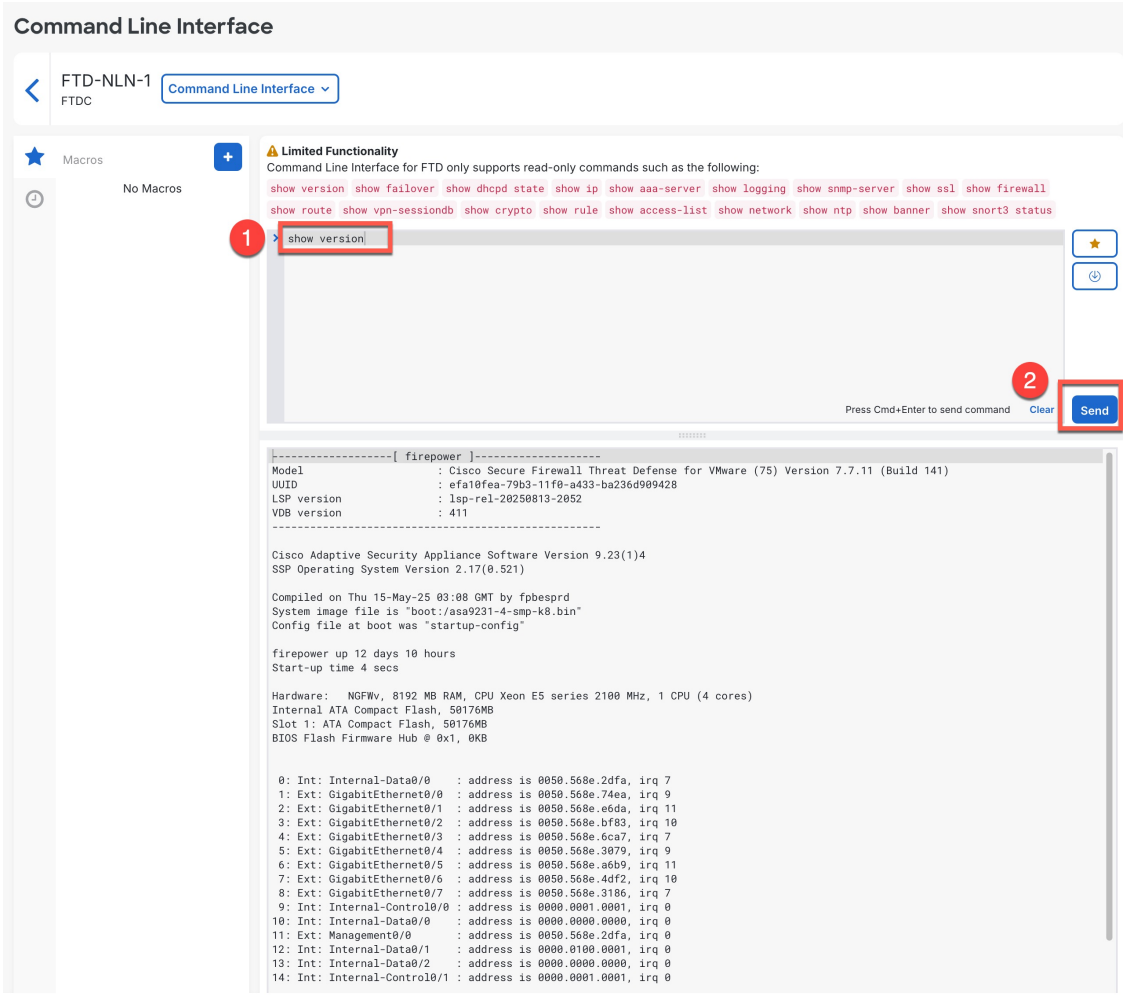
Step 2 Choose **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Select the device, and in the **Device Actions** pane, click **>_Command Line Interface.**



Step 5 Enter one or more commands in the command pane, and click **Send**.



If there are limitations on the commands you can run, they appear in the area above the command pane.

The response to your commands is displayed in the response pane. If there is no output for a command (either it was executed successfully, or there was no output to show), you will see `Done!` in the results pane.

Note
If you enter a very long list of commands, you may exceed the limitations of Security Cloud Control's interface with the device. If you see an error, you can add extra blank lines between groups of commands so Security Cloud Control can send the commands in batches.

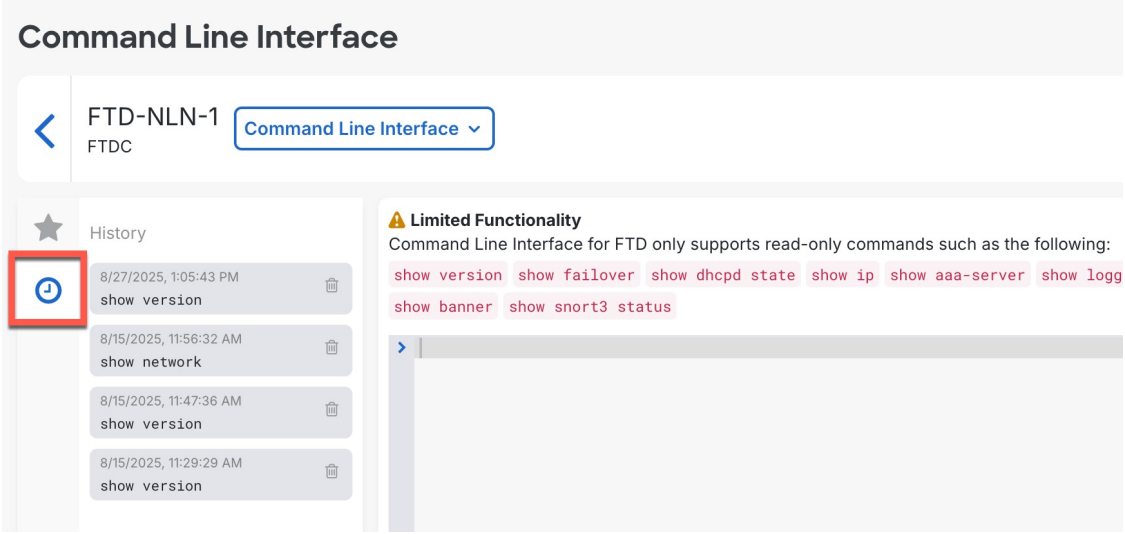
Example:

The following ASA example sends a batch of commands that creates three network objects and a network object group that contains those network objects.



Step 6 After you send commands, Security Cloud Control records that command in the **History** pane. You can rerun the commands saved in the **History** pane or use the commands as a macro.

a) Click the clock icon to open the **History** pane.



b) Select the command in the **History** pane that you want to modify or resend.

c) Reuse the command as it is or edit it in the command pane and click **Send**.

Use the bulk Command Line Interface

Send CLI commands to multiple devices of the same type at once.

Procedure

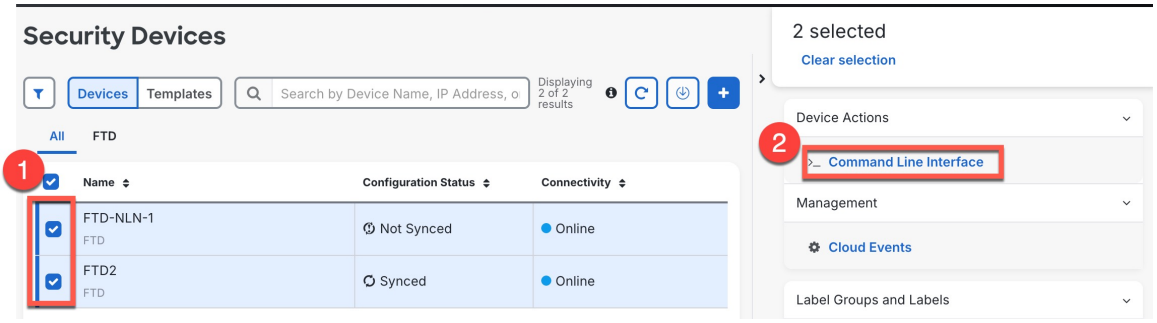
Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

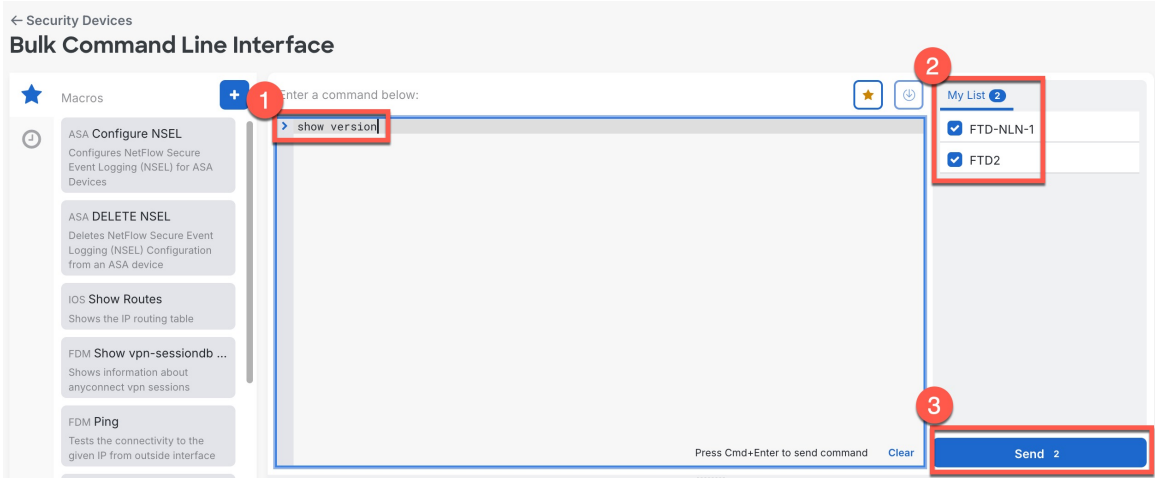
Step 4 Select multiple devices of the same type, and in the **Device Actions** pane on the right, click **>_Command Line Interface**.

Figure 9: Open the Command Line Interface



Step 5 Enter one or more commands in the command pane, check or uncheck devices you want to send the commands to in the **My List** field, and click **Send**.

Figure 10: Command Line Interface



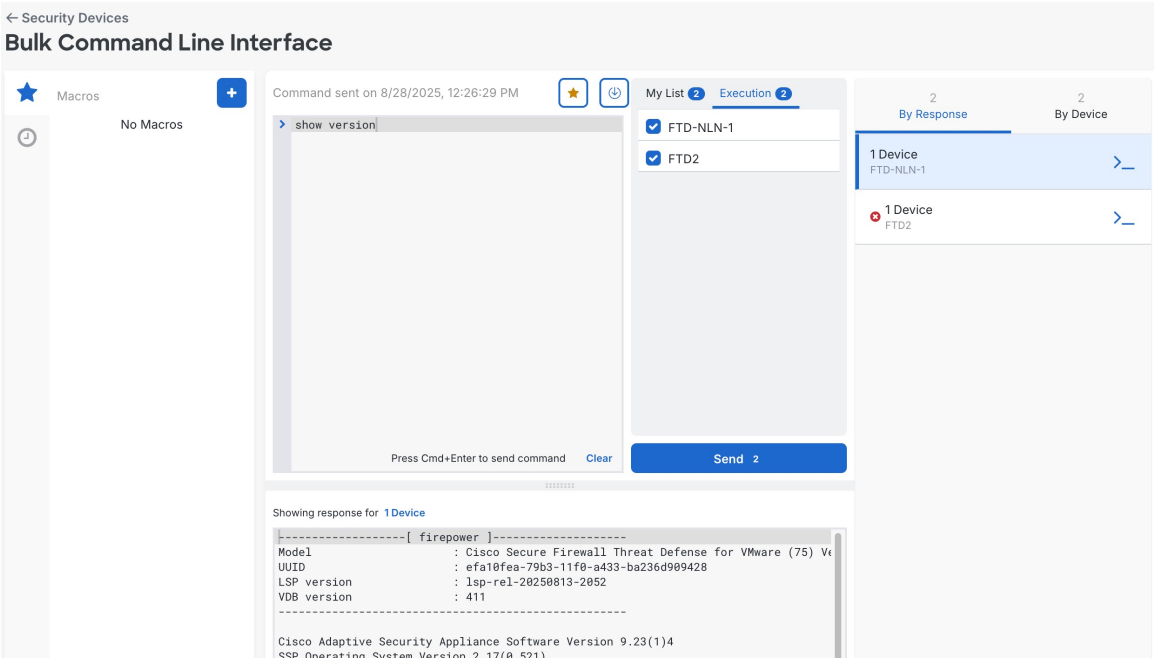
Note
If you enter a very long list of commands, you may exceed the limitations of Security Cloud Control's interface with the device. If you see an error, you can add extra blank lines between groups of commands so Security Cloud Control can send the commands in batches.

Note
For the ASA, if any of the selected devices are not synced, only the following commands are allowed: **show**, **ping**, **traceroute**, **vpn-sessiondb**, **changeto**, **dir**, **write**, and **copy**.

Step 6 View the device output.

The **Execution** tab shows the devices where the commands were sent; this list should match the selected devices in **My List**.

Figure 11: Command Line Interface



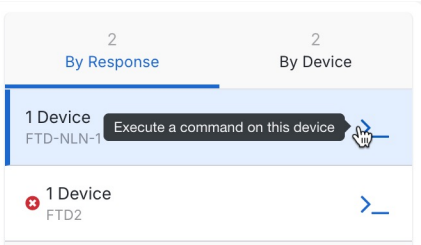
If there is no output for a command (either it was executed successfully, or there was no output to show), you will see `Done!` in the results pane.

The devices' response to the commands are displayed below in the response pane. If the response was the same for more than one device, the response pane displays the message "Showing Responses for X devices." Click **X Devices** to show all the devices that returned the same response in a pane to the right. Click **View Device** to go to that device in **Inventory**.

On the **By Response** tab, devices with identical responses are consolidated in a single row. Click a different row to show the response from other devices.

To re-run the command on the selected devices, click the prompt symbol to the right of the device row, and then click **Send**. You can change the commands you want to send or check and uncheck devices in the **My List** tab.

Figure 12: Execute a Command

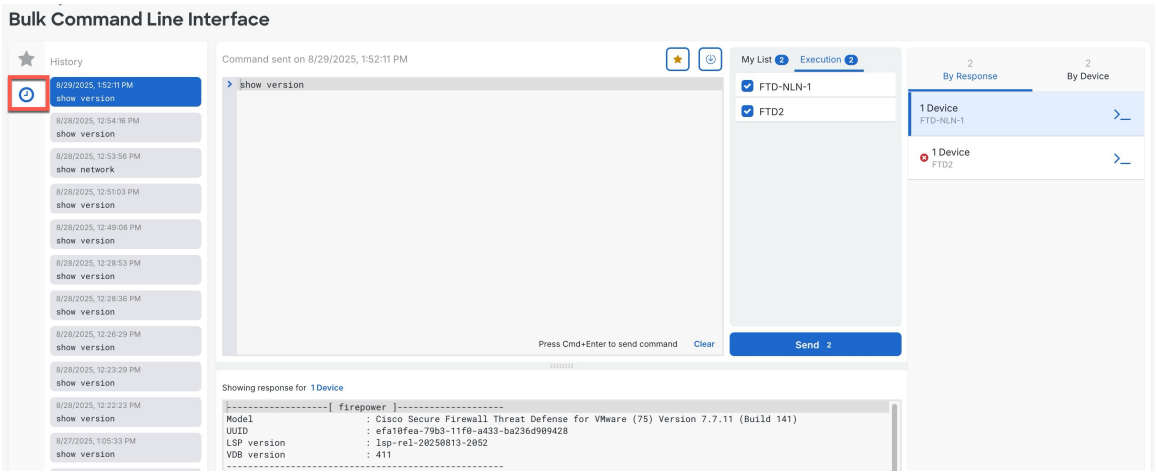


Click the **By Device** tab, and select a device to show only that device's command response.

Step 7 After you send commands, Security Cloud Control records that command in the **History** pane. You can rerun the commands saved in the history pane or use the commands as a macro. The commands in the history pane are associated with the original devices on which they were run.

a) Click the clock icon to open the **History** pane.

Figure 13: History Pane



b) Select the command in the **History** pane that you want to modify or resend.

Note that the command you pick is associated with specific devices (shown on the **Execution** tab) and not necessarily the ones you chose in the first step.

c) Click the **My List** tab to check or uncheck additional devices.

d) Reuse the command as it is or edit it in the command pane, and click **Send**.

Run a CLI macro

A CLI macro is a fully-formed CLI command ready to use on one or more devices of the matching type.

For some device types, Security Cloud Control provides system-defined macros. System-defined macros cannot be edited or deleted.

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**

Step 3 Click the **Devices** tab.

Step 4 Select one or more devices of the same type, and in the **Device Actions** pane on the right, click **>_Command Line Interface**.

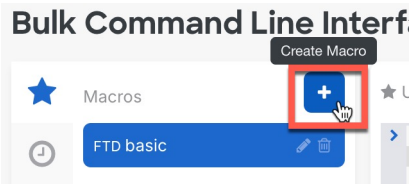
You cannot create macros without first choosing a device.

Step 5 Create a macro for this device type if one does not already exist.

a) Add a macro in one of the following ways:

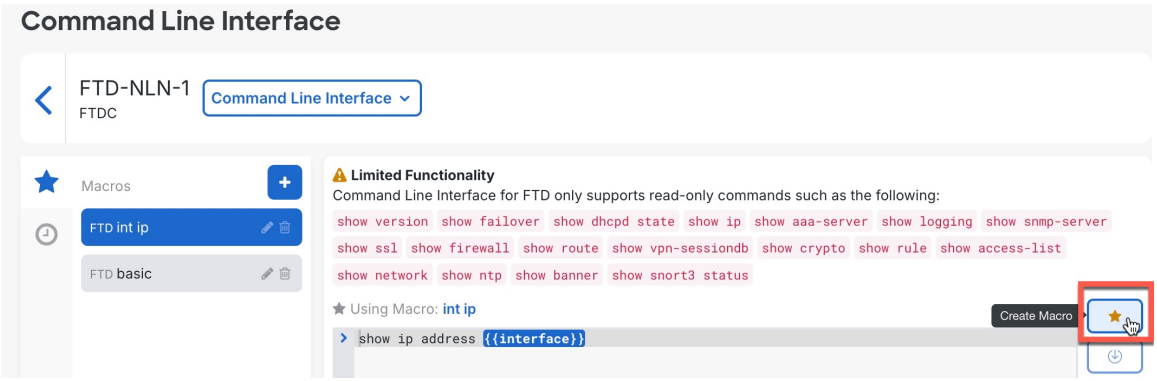
- New macro—On the **Macros** tab ( ), create a new macro by clicking the **Create Macro** ( ) button.

Figure 14: Create New Macro



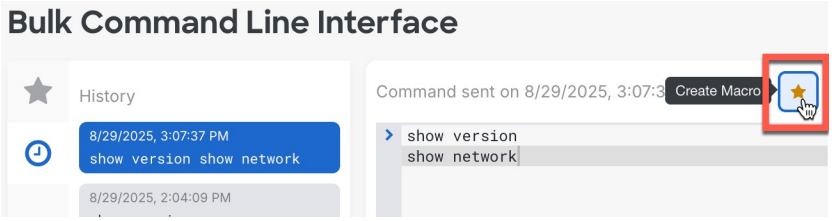
- From an existing macro—On the **Macros** tab ( ), create a macro starting with the same commands by selecting a macro and then clicking the **Create Macro** ( ) button.

Figure 15: Create Macro from Existing



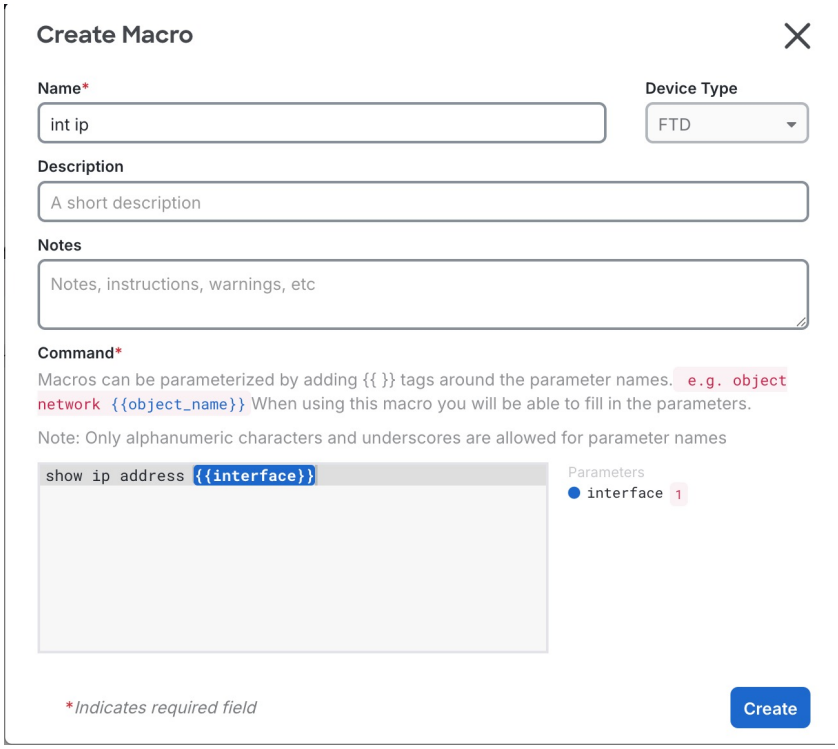
- From history—On the **History** tab ( ), select a command you already ran, and then click **Create Macro** ( ) button.

Figure 16: Create Macro from History



b) Give the macro a unique name and provide an optional description and notes.

Figure 17: Create Macro



c) Enter the commands in the **Command** field. For variables, enter the parameter surrounded by double curly brackets: **{{***parameter***}}**.

You will define the parameter before you run the macro.

```
> show running-config | grep {{username}}
```

You can name your parameters anything you want.

d) Click **Create**.

Step 6 Click the star ★ to open the **Macros** tab, and select a macro from the list.

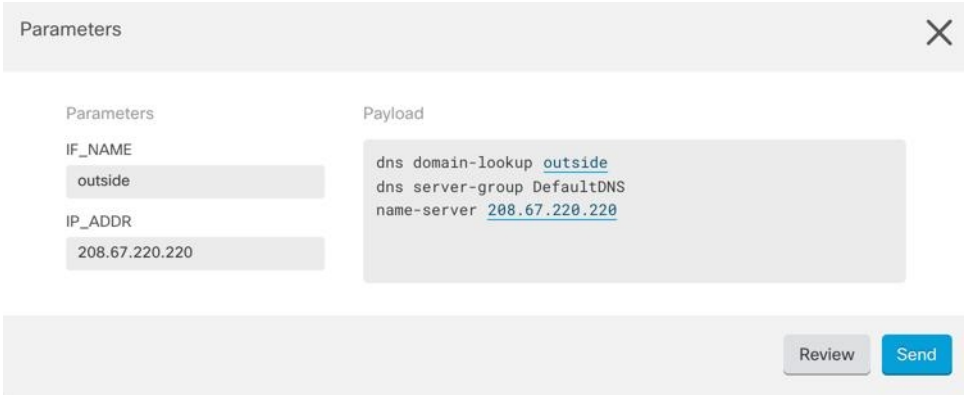
You can edit or delete a macro using the icons next to the macro name.

Step 7 Run the macro one of two ways:

- If the macro has no parameters to define, click **Send**. The response to the command appears in the response pane. You're done.
- If the macro contains parameters, such as the Configure DNS macro below, click **>_ View Parameters.**



a) In the **Parameters** pane, fill in the values for the parameters in the **Parameters** fields.



b) Click **Send**.

Step 8 Save configuration changes if you made any.

After you send the command you may see the message, "Some commands may have made changes to the running config" along with two links.



- Clicking **Write to Disk** saves the changes made by this command, and any other change that in the running config, to the device's startup config.
- Clicking **Dismiss**, dismisses the message and does not save the configuration. You may lose the configuration changes if you reboot the device.

Export Command Line Interface results

You can export the results of CLI commands to a comma separated value (.csv) file, so you can filter and sort the information in it. The exported information contains the following categories:

- Device
- Date
- User
- Command
- Output

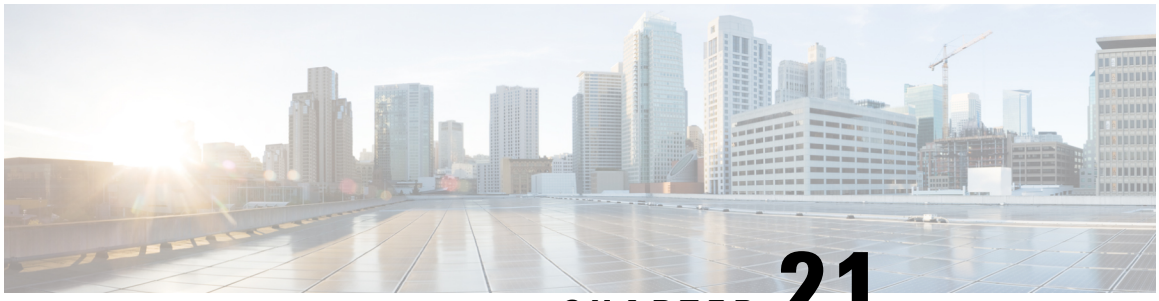
Procedure

Step 1 Run your commands according to Use the Command Line Interface on a single device, on page 630, Use the bulk Command Line Interface, on page 632, or Run a CLI macro, on page 635, or choose a command from the **History** pane ( ).

Step 2 Click the **Export results** ( ) button.

Step 3 Give the .csv file a descriptive name and save the file to your local file system.

When reading the command output in the .csv file, expand all the cells to see all the results of the command.



CHAPTER 21

Migrate Firewalls with the Migration Tool in Security Cloud Control

This chapter provides steps for migrating Cisco firewalls and third-party firewalls to Security Cloud Control using Secure Firewall migration tool.

- Firewall migration tool guide audience, on page 641
- Firewall migration tool in Security Cloud Control, on page 642
- Migrate Secure Firewall ASA to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control, on page 647
- Migrate FDM-Managed Device to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control , on page 650
- Migrate Check Point Firewall to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control , on page 653
- Migrate Fortinet Firewall with the Firewall Migration Tool in Security Cloud Control, on page 656
- Migrate Palo Alto Networks Firewall to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control, on page 658
- Related documentation, on page 660

Firewall migration tool guide audience

The Firewall Migration Tool guide is a documentation resource that assists specific users in migrating firewall configurations to Cisco Secure Firewall Threat Defense.

Target audience

This guide is for you if you use Security Cloud Control to manage your Secure Firewall ASA devices and FDM-managed threat defense devices or you use third-party firewalls such as Palo Alto Networks, Check Point, and Fortinet firewalls and you want to move into the Cisco Secure Firewall Threat Defense. You can migrate all your existing firewall configurations to a threat defense device managed by your Cloud-Delivered Firewall Management Center using the Secure Firewall migration tool in Security Cloud Control. This document describes what you need to do to migrate your configurations.

Firewall migration tool in Security Cloud Control

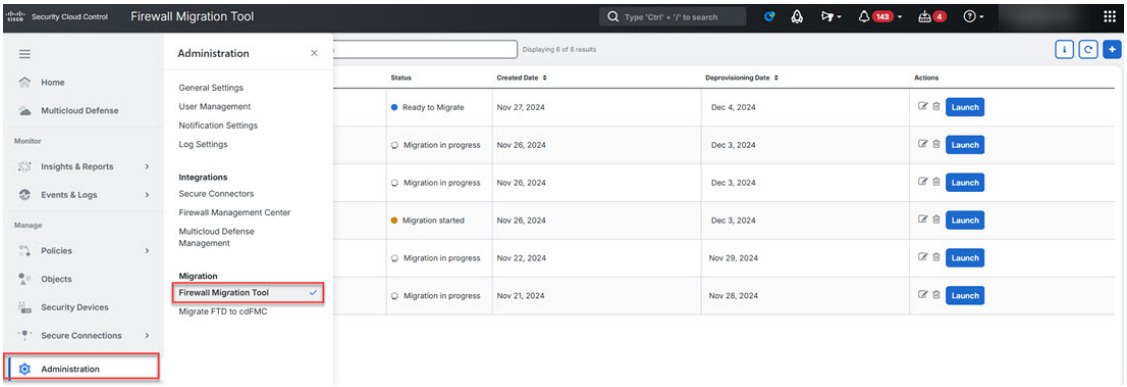
The Firewall Migration Tool in Security Cloud Control is a cloud-based migration service that

- extracts device configurations from source devices or uploaded configuration files
- migrates validated configurations to Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant, and
- eliminates the need to download and maintain the desktop version of the Secure Firewall migration tool.

Migration workflow and supported configurations

When you initialize a new migration in **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool** and **Launch** it, a cloud instance of the migration tool opens in a new browser tab and enables you to perform your migration tasks using a guided workflow.

The migration tool supports most configurations; unsupported configurations must be manually configured in the Cloud-Delivered Firewall Management Center. See Supported configurations, on page 643.



You can migrate Cisco and third-party firewall configurations to Firepower Threat Defense devices:

- Cisco Secure Firewall ASA
- Firepower Threat Defense managed by Firewall Device Manager
- Check Point firewall
- Palo Alto Networks firewall
- Fortinet firewall

Important You need an admin or a super admin user role in Security Cloud Control to be able to use the Firewall migration tool.

Supported configurations

The migration tool supports the configurations that enable you to migrate network objects, services, access rules, NAT configurations, routing, interfaces, VPN settings, and dynamic routing protocols from source firewalls to the management center.

The migration tool supports these configurations:

- Network objects and groups
- Service objects, except those configured for a source and destination
- Referenced ACL and NAT rules
- Service object groups



Note Nested service object group contents are broken down to individual objects before being migrated, because the cloud-delivered management center does not support nesting.

- IPv4 and IPv6 FQDN objects and groups
- IPv6 conversion (interface, static routes, objects, ACL, and NAT)
- Access rules applied to ingress interfaces
- Global ACLs
- Auto NAT, manual NAT, and object NAT
- Static routes, equal-cost multipath (ECMP) routes, and policy-based routing (PBR)
- Physical interfaces
- Sub-interfaces
- Port channels
- Virtual tunnel interface
- Bridge groups in transparent mode
- IP SLA objects - the migration tool creates them, maps them with static routes, and migrates them
- Time-based objects
- Site-to-site VPN
    - Site-to-Site VPN—When the Firewall migration tool detects crypto-map configuration in the source ASA, FDM-managed device, Palo Alto Networks firewall, or Fortinet firewall, the Secure Firewall migration tool migrates it AS a point-to-point topology to the management center VPN
    - Crypto-map (static/dynamic)-based VPN from ASA, FDM-managed devices, Palo Alto Networks firewall, and Fortinet firewall
    - Route-based (VTI) ASA and FDM VPN

- Certificate-based VPN migration from ASA, FDM-managed device, Palo Alto Networks firewall, Fortinet firewall

Important If you have site-to-site VPN configurations in your source ASA, FDM-managed device, Palo Alto Networks firewall, or Forinet firewall, ensure that their device trustpoint or certificates are configured manually in the cloud-delivered FMC.

- Remote-access VPN
  - SSL and IKEv2 protocols
  - Authentication methods—AAA only, client certificate only, SAML, AAA, and client certificate
  - AAA—Radius, local, LDAP, and AD
  - Connection profiles, group policy, dynamic access policy, LDAP attribute map, and certificate map
  - Standard and extended ACL
  - Custom attributes and VPN load balancing

Important If you have configured remote-access VPN in your source firewall, ensure these tasks are performed:

- Configure the ASA,FDM-managed device, Palo Alto Networks, and Fortinet firewall trustpoints manually on the management center AS PKI objects
- Retrieve AnyConnect packages, Hostscan files (dap.XML, data.XML, hostscan package), external browser package, and AnyConnect profiles from the source ASA and FDM-managed device
- Upload all AnyConnect packages and profiles to the management center

- Dynamic route objects, BGP, and EIGRP
  - Policy list
  - Prefix list
  - Community list
  - Autonomous system (AS) path
  - Route map

Note The migration tool analyzes all objects and object groups based on both their name and configuration, and reuses objects that have the same name and configuration; however, XML profiles in remote access VPN configurations are validated only using their name.

Refer to *Cisco Secure Firewall Migration Tool Compatibility Guide* for more information.

Licenses

The Secure Firewall migration tool does not require any additional license to be accessed from Security Cloud Control.

However, you need to have a Security Cloud Control base subscription and licenses for the Firepower Threat Defense features you want to migrate.

Initialize a new migration instance

This task creates a new migration instance that allows you to migrate firewall configurations using the Firewall migration tool.

The Firewall migration tool enables you to create up to 10 migrations and launch all of them concurrently. Each migration instance opens up in a new browser tab. If there are several users provisioned on your tenant, note that you can launch only migrations that you created.

Procedure

Step 1 Log in to your Security Cloud Control tenant.

Step 2 Choose **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool**.

Step 3 Click the blue plus  button to initialize a new migration instance.

Note
The Firewall migration tool enables you to create up to 10 migrations and launch all of them concurrently—each migration instance opens up in a new browser tab. However, if there are several users provisioned on your tenant, note that you can launch only migrations that you created.

If you want to initialize a new migration instance when you already have 10 migrations, delete one of the existing migration instances.

Step 4 Security Cloud Control generates a name for your migration automatically; you can use the auto-generated name or change it to suit your needs.

Step 5 Click **OK** and wait until you see the status change from **Initializing** to **Ready to Migrate**.

Security Cloud Control also notifies you with a new announcement on the **Notifications** pane when your migration is ready.

Step 6 On the new migration, click **Launch**.

The migration tool opens in a new browser tab and does not require any authentication.

Note
Migrations in Security Cloud Control are valid for seven days from the date of being created, after which they are automatically deprovisioned. This ensures that Security Cloud Control resources are freed up from time to time. You can check the dates in the **Created Date** and **Deprovisioning Date** columns.

Security Cloud Control displays the status of all the migrations in the **Status** column; you can filter out the migrations based on the their statuses. You can also select a migration to see migration details, such as date and time of creation, date and time of start, source and destination device names, and created by on the right pane. Note that when several users are provisioned on your Security Cloud Control tenant, you can only launch migrations you created.

The Firewall migration tool opens in a new browser tab and is ready for use. The migration instance is now initialized and you can begin configuring your firewall migration.

Delete a migration instance

Delete a migration instance when you want to manually deprovision your migration before Security Cloud Control automatically deprovisions it, such as after your migration tasks are finished.

You can delete a migration instance to manually control the deprovisioning process rather than waiting for automatic deprovisioning.

Procedure

Step 1 Choose **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool**.

Step 2 On the migration you want to delete, click **Delete** under the **Actions** pane.

Step 3 Confirm your action by clicking **Delete**.

The migration instance is deleted and deprovisioned.

Demo mode in secure firewall migration tool

Demo mode is a Secure Firewall Migration Tool feature that

- provides an opportunity to perform a demo migration using dummy devices and visualize how an actual migration flow would look like
- allows leveraging the whole feature set of the Secure Firewall Migration Tool, except pushing of configurations, and
- enables a trial run of the end-to-end migration procedure before performing your actual migration.

Demo mode access and workflow

When you launch the Secure Firewall Migration tool and are on the **Select Source Configuration** page, you can choose to start performing a migration using **Start Migration** or enter the **Demo Mode**.

The migration tool triggers the demo mode based on the selection you make in the **Source Firewall Vendor** drop-down; you can also upload a configuration file or connect to a live device and continue with the migration. You can proceed performing the demo migration by selecting demo source and target devices such as demo FMC, demo FTD devices, or Multicloud Defense.

Caution Choosing **Demo Mode** erases existing migration workflows, if any. If you use the demo mode while you have an active migration in **Resume Migration**, your active migration is lost and needs to be restarted from first, after you use the demo mode.

Migrate Secure Firewall ASA to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control

The Secure Firewall migration tool in Security Cloud Control lets you to migrate configurations from live ASA devices that are managed by Security Cloud Control or using a configuration file extracted from an ASA device. To read more about the Secure Firewall ASA configurations supported for migration, see ASA Configuration Support in the *Migrating Cisco Secure Firewall ASA to Cisco Secure Firewall Threat Defense with the Migration Tool* book.

Select Source Configuration

After launching your migration instance from Security Cloud Control, choose **Cisco ASA** in **Select Source Configuration** and click **Start Migration**. You can either manually upload an ASA configuration file or choose any one of the Security Cloud Control-managed ASA devices listed on the **Connect to ASA** pane. If you are trying to select a Security Cloud Control-managed device, note that devices having **Configuration Status** as **Synced** are only listed by the migration tool; if you do not see the device you want to migrate in the list, check if the device configuration changes are up-to-date and synced with Security Cloud Control. Note that one ASA device can be selected as the source device by more than one user at the same time and the confuguration extraction takes place seamlessly. If you have one or more security contexts configured on your ASA device, the migration tool allows you to choose which context you want to migrate; you can also merge all your contexts to a single instance and then migrate them. Refer Select the ASA Primary Security Context for more information.

The migration tool parses the device configuration and displays a summary containing the parsed configurations. Click **Next**.

Select Target

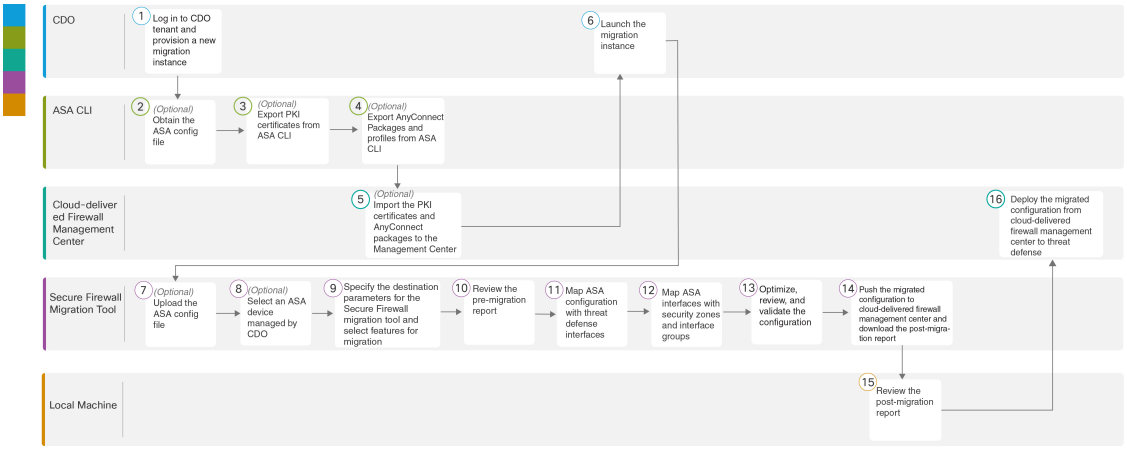
In the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default, and the Firepower Threat Defense devices managed by that management center are listed. You can choose the Firepower Threat Defense device you wish to migrate your ASA configuration to or choose to **Proceed without FTD**. Note that the devices listed are displayed either as **In Use** or **Available** based on whether the device is being used in another migration instance. However, you can perform an override by clicking **Change Device Status**, selecting the device from the **In Use** list, and clicking **Continue**, which will make the device available for being selected as the target.

Caution Changing the device status from **In Use** to **Available** impacts the ongoing migration instance that is using the device already. We recommend that you exercise caution when doing this.

Choosing **Proceed without FTD** pushes only NAT objects, ACLs, and port objects to the Cloud-Delivered Firewall Management Center. For more information about the commonly used ASA features and their equivalent threat defense features, see Cisco Secure Firewall ASA to Threat Defense Feature Mapping guide.

The flowchart that follows illustrates the step-by-step procedure for migrating an ASA to Firepower Threat Defense using the Firewall migration tool in Security Cloud Control.

Figure 18: End-to-End Procedure for ASA to FTD Migration with Firewall Migration Tool in Security Cloud Control



To perform the procedure with more detailed steps, continue to Obtain the ASA Configuration File in the Migrating Cisco Secure Firewall ASA to Threat Defense with the Migration Tool guide.

	Workspace	Steps
1	Security Cloud Control	Log in to your Security Cloud Control tenant, navigate **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool**, and click the blue plus button to start provisioning a new migration instance.
2	ASA CLI	(Optional) Obtain the ASA configuration file: To obtain the ASA config file from ASA CLI, see Obtain the ASA Configuration File. If you intend to select a Security Cloud Control-managed ASA device in the **Select Source Configuration**, skip to Step 3.
3	ASA CLI	(Optional) Export public key infrastructure (PKI) certificates from ASA CLI: This step is required only if you are planning to migrate site-to site VPN and RAVPN configurations from ASA to threat defense. To export the PKI certificates from ASA CLI, see Export PKI Certificate from ASA and Import into Management Center. If you do not have remote-access VPN configurations on your device or you are not planning to migrate site-to-site VPN and remote-access VPN, skip to Step 7.
4	ASA CLI	(Optional) Export AnyConnect packages and profiles from ASA CLI: This step is required only if you are planning to migrate remote-access VPN features from ASA to threat defense. To export AnyConnect packages and profiles from ASA CLI, see Retrieve AnyConnect Packages and Profiles.
5	Cloud-Delivered Firewall Management Center	(Optional) Import the PKI certificates and AnyConnect packages to the management center: To import the PKI certificates to management center, see Step 2 in Export PKI Certificate from ASA and Import into Management Center and Retrieve AnyConnect Packages and Profiles.

	Workspace	Steps
6	Security Cloud Control	Ensure that the status of the migration instance you created is **Ready to Migrate** and click **Launch**; the Secure Firewall Migration Tool opens in a new browser tab.
7	Secure Firewall Migration Tool	(Optional) Upload the ASA config file obtained from ASA CLI, see Upload the ASA Configuration File. If you are planning to migrate configuration from an ASA device managed by Security Cloud Control, skip to Step 8.
8	Secure Firewall Migration Tool	From the list of ASA devices shown, that are managed by your Security Cloud Control tenant, select the device whose configuration you want to migrate. If you have configured more than one security context on your ASA device, select the context you wish to migrate or choose to merge all the contexts to a singe instance in the **Primary Context Selection**drop-down. See Select the ASA Primary Security Context for more information.
9	Secure Firewall Migration Tool	On the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default.
10	Secure Firewall Migration Tool	Select a target device from the list of threat defense devices managed by your Cloud-Delivered Firewall Management Center or choose **Proceed without FTD** and proceed.
11	Secure Firewall Migration Tool	Download the pre-migration report and review it for a detailed summary of the parsed configuration. For detailed steps, see Review the Pre-Migration Report.
12	Secure Firewall Migration Tool	**Map FTD Interface** with the ASA configuration. Because the names of physical and port channel interfaces on your ASA and threat defense devices are not always the same, you can select to which interface in the target threat defense device you want an ASA interface to get mapped. For more information, see Map ASA Configurations with Secure Firewall Device Manager Threat Defense Interfaces.
13	Secure Firewall Migration Tool	Map ASA interfaces to existing threat defense security zones and interface groups. See Map ASA Interfaces to Security Zones and Interface Groups for detailed steps.
14	Secure Firewall Migration Tool	**Optimize, Review and Validate Configuration** with caution and ensure ACLs, objects, NAT, interfaces, routes, site-to-site VPN, and remote-access VPN rules are configured as intended for the destination threat defense device. See Optimize, Review and Validate the Configuration.
15	Secure Firewall Migration Tool	Once your configuration validation is a success, **Push Configuration** to the Cloud-Delivered Firewall Management Center. For more information, see Push the Migrated Configuration to Management Center.
16	Local Machine	Download the post-migration report and review it. To know more on what information the post-migration report contains, see Review the Post-Migration Report and Complete the Migration.

	Workspace	Steps
17	Cloud-Delivered Firewall Management Center	Deploy the newly migrated configuration to the threat defense device.

Migrate FDM-Managed Device to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control

You can migrate FDM-managed device configurations using configuration files or by simply selecting the FDM-managed devices that are onboarded to Security Cloud Control . To read more about the FDM-managed device configurations supported for migration, see FDM-Managed Device Configuration Support in *Migrating an FDM-Managed Device to Secure Firewall Threat Defense with the Migration Tool* book.

Select Source Configuration

After launching your migration instance from Security Cloud Control , choose **Cisco Secure Firewall Device Manager** in **Select Source Configuration** and choose from of the following options:

- **Migrate Firepower Device Manager (Shared Configurations Only)**
- **Migrate Firepower Device Manager (Includes Device & Shared Configurations)**
- **Migrate Firepower Device Manager (Includes Device & Shared Configurations) to FTD Device (New Hardware)**

On clicking **Continue** , the migration tool enables you to either manually upload an FDM-managed device configuration file or choose any one of the FDM-managed devices onboarded to Security Cloud Control , which are listed on the **Connect to FDM** pane and click **Next** .

Select Target

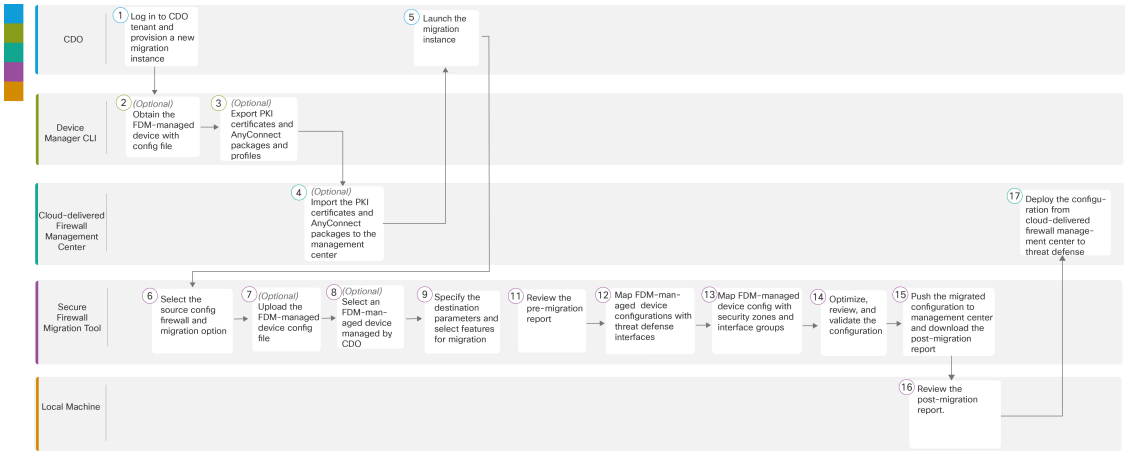
In the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default, and the Firepower Threat Defense devices managed by that management center are listed. You can choose the Firepower Threat Defense device you wish to migrate the configuration to, and proceed with the migration.

Note that the devices listed are displayed either as **In Use** or **Available** based on whether the device is being used in another migration instance. However, you can perform an override by clicking **Change Device Status** , selecting the device from the **In Use** list, and clicking **Continue** , which will make the device available for being selected as the target.

Caution Changing the device status from **In Use** to **Available** impacts the ongoing migration instance that is using the device already. We recommend that you exercise caution when doing this.

The flowchart that follows illustrates the step-by-step procedure for migrating an FDM-managed device using the Firewall migration tool in Security Cloud Control .

Figure 19: End-to-End Procedure for FDM-Managed Devices to FTD Migration with the Firewall Migration Tool in Security Cloud Control



To perform the procedure with more detailed steps, continue to Obtain the FDM-managed Device Configuration File in the Migrating an FDM-managed Device to Secure Firewall Threat Defense with the Migration Tool guide.

	Workspace	Steps
1	Security Cloud Control	Log in to your Security Cloud Control tenant, and in the left pane, click **Tools & Services** > **Firewall Migration Tool Administration** > **Migration** > **Firewall Migration Tool** , and click the blue plus button to start provisioning a new migration instance.
2	Device Manager CLI	(Optional) Obtain the FDM-managed device configuration file: To obtain the FDM-managed device config file from device manager CLI, see Obtain the FDM-Managed Device Configuration File . If you intend to select a Security Cloud Control -managed FDM device in the **Select Source Configuration** , skip to Step 3.
3	Device Manager CLI	(Optional) Export PKI certificates and AnyConnect packages and profiles: This step is required only if you are planning to migrate site-to site VPN and remote-access VPN features from an FDM-managed device to threat defense. To export the PKI certificates from device manager CLI, see Step 1 in Export PKI Certificate from and Import into Firewall Management Center . To export AnyConnect packages and profiles from device manager CLI, see Step 1 in Retrieve AnyConnect Packages and Profiles . If you are not planning to migrate site-to-site VPN and remote-access VPN configurations, skip to Step 7.
4	Cloud-Delivered Firewall Management Center	(Optional) Import the PKI certificates and AnyConnect packages to management center: To import the PKI certificates to management center, see Step 2 in Export PKI Certificate from and Import into Firewall Management Center and Retrieve AnyConnect Packages and Profiles .
5	Security Cloud Control	Ensure that the status of the migration instance you created is **Ready** and click **Launch** ; the Secure Firewall Migration Tool opens in a new browser tab.

	Workspace	Steps
6	Secure Firewall Migration Tool	To select the source configuration firewall and migration option, see Select the Source Configuration Firewall and Migration .
7	Secure Firewall Migration Tool	(Optional) Upload the FDM-managed device config file obtained from device manager CLI, see Upload the FDM-Managed Device Configuration File . If you are migrating configuration from an FDM-managed device onboarded to Security Cloud Control , skip to Step 8.
8	Secure Firewall Migration Tool	From the list of FDM-managed devices shown, that are managed by your Security Cloud Control tenant, select the device whose configuration you want to migrate.
9	Secure Firewall Migration Tool	On the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default.
10	Secure Firewall Migration Tool	Select a target device from the list of threat defense devices managed by your Cloud-Delivered Firewall Management Center or choose **Proceed without FTD** and proceed.
11	Secure Firewall Migration Tool	Download the pre-migration report and review it for a detailed summary of the parsed configuration. For detailed steps, see Review the Pre-Migration Report .
12	Secure Firewall Migration Tool	**Map FTD Interface** with the FDM-managed device configuration. Because the names of physical and port channel interfaces on your FDM and threat defense devices are not always the same, you can select to which interface in the target threat defense device you want an FDM-managed device interface to get mapped. For more information, see Map FDM-managed Device Configurations with Secure Firewall Device Manager Threat Defense Interfaces .
13	Secure Firewall Migration Tool	Map FDM-managed device interfaces to existing threat defense security zones and interface groups. See Map FDM-managed Interfaces to Security Zones and Interface Groups for detailed steps.
14	Secure Firewall Migration Tool	**Optimize, Review and Validate Configuration** with caution and ensure ACLs, objects, NAT, interfaces, routes, site-to-site VPN, and remote-access VPN rules are configured as intended for the destination threat defense device. See Optimize, Review and Validate the Configuration .
15	Secure Firewall Migration Tool	Once your configuration validation is a success, **Push Configuration** to the Cloud-Delivered Firewall Management Center . For more information, see Push the Migrated Configuration to Management Center .
16	Local Machine	Download the post-migration report and review it. To know more on what information the post-migration report contains, see Review the Post-Migration Report and Complete the Migration .
17	Cloud-Delivered Firewall Management Center	Deploy the newly migrated configuration to the threat defense device.

Troubleshoot FDM-managed Migration Issues

If you encounter a migration-blocking error when trying to migrate an FDM-managed device, try the following troubleshooting steps:

- Ensure that your target on-premises Firewall Management Center 's network connectivity is up.
- Ensure that the FDM-managed that you are trying to migrate is not manage by the target on-premises Firewall Management Center already.

Resume Migration

If you have started a migration from Security Cloud Control and wish to continue later, you can simply close the Firewall migration tool tab. When you want to continue with the migration, you can log in to Security Cloud Control and in **Firewall Migration Tool** click **Launch** on the migration you want to continue. The migration tool detects that you were migrating and lets you continue from where you left off. However, for the migration tool to detect that you have an ongoing migration, you must at least perform up to parsing of the source configuration. If you leave off a migration before performing this step, you can still launch the same migration from Security Cloud Control but you must start the migration from the first.

A Firewall Migration Tool is a tool that migrates FDM-managed device configurations, supports configuration file uploads, and facilitates source and target device selection.

- migrates FDM-managed device configurations
- supports configuration file uploads, and, and
- facilitates source and target device selection.

Migrate Check Point Firewall to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control

You can migrate your Check Point Firewall configurations to threat defense either by manually extracting the configuration from your firewall or using the configuration extractor that comes inbuilt with the migration tool. To know the Check Point configurations that are supported, see Check Point Configuration Support .

Select Source Configuration

In the **Source Firewall Vendor** drop-down, choose **Check Point (r80-r81)** or **Check Point (r75-r77)** based on the firewall version you want to migrate. You can manually upload an extracted firewall configuration using **Manual Configuration Upload** or use the **Live Connect** option to connect to the Check Point Security Gateway to export the configuration file.

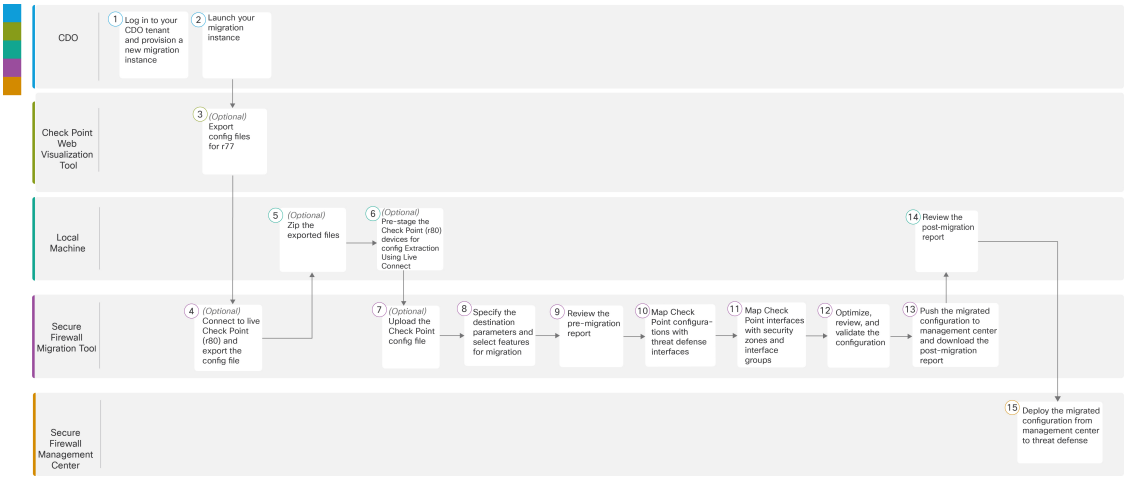
Note You can use **Live Connect** only when you have selected Check Point (r80-81) and **Configuration Extractor** only when you have selected Check Point (r75-r77).

Select Target

In the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default, and the Firepower Threat Defense devices managed by that management center are listed. You can choose the Firepower Threat Defense device you wish to migrate the configuration to, and proceed with the migration.

Note that the devices listed are displayed either as **In Use** or **Available** based on whether the device is being used in another migration instance. However, you can perform an override by clicking **Change Device Status** , selecting the device from the **In Use** list, and clicking **Continue** , which will make the device available for being selected as the target. Choosing **Proceed without FTD** pushes only NAT objects, ACLs, and port objects to the Cloud-Delivered Firewall Management Center . For more information about the commonly used ASA features and their equivalent threat defense features, see Cisco Secure Firewall ASA to Threat Defense Feature Mapping guide.

Caution Changing the device status from **In Use** to **Available** impacts the ongoing migration instance that is using the device already. We recommend that you exercise caution when doing this.



To perform the migration with more detailed steps, continue to Export the Check Point Configuration Files in *Migrating Check Point Firewall to Secure Firewall Threat Defense with the Migration Tool* book.

	Workspace	Steps
1	Security Cloud Control	Log in to your Security Cloud Control tenant, and in the left pane, click **Tools & Services** > **Firewall Migration Tool Administration** > **Migration** > **Firewall Migration Tool** and click the blue plus button to start provisioning a new migration instance.
2	Security Cloud Control	Launch your migration instance from Security Cloud Control and choose **Check Point (r75–r77)** or **Check Point (r80–r81)** in the **Source Firewall Vendor** drop-down, based on your requirement.

	Workspace	Steps
3	Check Point Web Visualization Tool	(Optional) Export the Check Point configuration file for r77: To export the Check Point configuration files for r77, see Export the Check Point Configuration Files for r77 . If you intend to export configuration files for r80 using Secure Firewall migration tool live connect feature, skip to step 6.
4	Secure Firewall Migration Tool	(Optional) Connect to live Check Point (r80) and export the config file: To export the Check Point configuration files for r80 using live connect feature, see Export the Check Point Configuration Files for r80 .
5	Local Machine	(Optional) Zip the exported files: select all the exported configuration files for r77 and compress them to a zip file. For detailed steps, see Zip the Exported Files .
6	Local Machine	Pre-stage the Check Point (r80) devices for config extraction: You must configure the credentials on Check Point (r80) devices before using Live Connect. For pre-staging credentials on Check Point (r80) devices, see Pre-Stage the Check Point Devices for Configuration Extraction Using Live Connect . This step is required only if you are planning to migrate configuration files for r80 devices.
7	Secure Firewall Migration Tool	(Optional) Upload the Check Point config file .
8	Secure Firewall Migration Tool	Specify the destination parameters for the Secure Firewall Migration Tool.
9	Secure Firewall Migration Tool	Navigate to where you downloaded the pre-migration report and review the report.
10	Secure Firewall Migration Tool	The Secure Firewall migration tool allows you to map the Check Point configuration with threat defense interfaces. For detailed steps, see Map Check Point Configurations with Secure Firewall Device Manager Threat Defense Interfaces .
11	Secure Firewall Migration Tool	To ensure that the Check Point configuration is migrated correctly, map the Check Point interfaces to the appropriate threat defense interface objects, security zones, and interface groups. For more information, see Map Check Point Interfaces to Security Zones and Interface Groups .
12	Secure Firewall Migration Tool	Optimize and review the configuration carefully and validate that it is correct and matches how you want to configure the threat defense device. For detailed steps, see Optimize, Review and Validate the Configuration to be Migrated .
13	Secure Firewall Migration Tool	This step in the migration process sends the migrated configuration to the Cloud-Delivered Firewall Management Center and allows you to download the post-migration report.
14	Local Machine	Navigate to where you downloaded the post migration report and review the report. For detailed steps, see Review the Post-Migration Report and Complete the Migration .

	Workspace	Steps
15	Cloud-Delivered Firewall Management Center	Deploy the migrated configuration from the Cloud-Delivered Firewall Management Center to threat defense.

Migrate Fortinet Firewall with the Firewall Migration Tool in Security Cloud Control

The Firewall migration tool allows migrating configurations from Fortinet firewall to threat defense devices managed by your Cloud-Delivered Firewall Management Center.

You can manually derive the configuration file from your Fortinet firewall and upload it to the migration tool to begin with your migration. To learn about supported Fortinet firewall configurations, see Fortinet Configuration Support.

Procedure

Step 1 On the **Select Source Configuration** page, choose **Fortinet (5.0+)** and click **Start Migration**.

Step 2 Click **Upload** to choose the Fortinet configuration file and click **Next**.

Step 3 In the **Select Target** page, choose the device you wish to migrate the configuration to.

The Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default, and the Firepower Threat Defense devices managed by that management center are listed.

The devices listed are displayed either as **In Use** or **Available** based on whether the device is being used in another migration instance. However, you can perform an override by clicking **Change Device Status**, selecting the device from the **In Use** list, and clicking **Continue**, which will make the device available for being selected as the target.

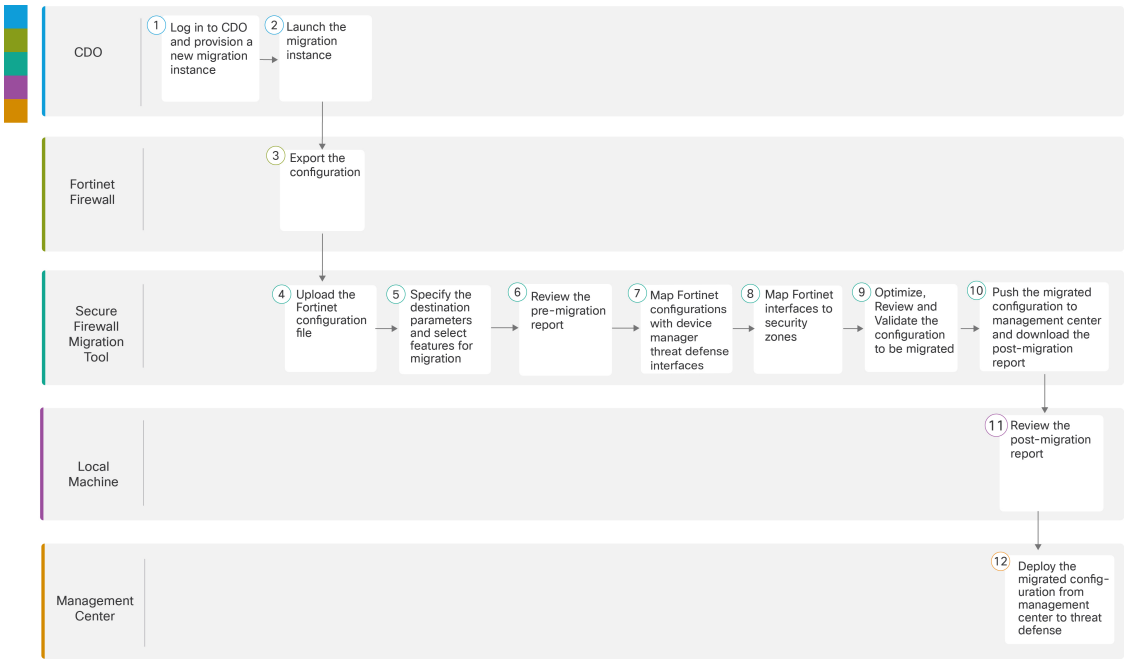
Choosing **Proceed without FTD** pushes only NAT objects, ACLs, and port objects to the Cloud-Delivered Firewall Management Center. For more information about the commonly used ASA features and their equivalent threat defense features, see Cisco Secure Firewall ASA to Threat Defense Feature Mapping guide.

Caution
Changing the device status from **In Use** to **Available** impacts the ongoing migration instance that is using the device already. We recommend that you exercise caution when doing this.

Step 4 Follow the migration workflow using the table and flowchart provided.

The flowchart that follows illustrates the step-by-step procedure for migration Fortinet firewall configurations to threat defense devices:

To perform the procedure with more detailed steps, continue to Export Fortinet Firewall Configuration from Fortinet Firewall GUI in Migrating Fortinet Firewall to Secure Firewall Threat Defense with the Migration Tool guide.



	Workspace	Steps
1	Security Cloud Control	Log in to your Security Cloud Control tenant, and in the left pane, click **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool**, and click the blue plus button to start provisioning a new migration instance.
2	Security Cloud Control	After your migration instance is ready, click **Launch** and choose **Fortinet (5.0+)**.
3	Fortinet Firewall	Export the Fortinet configuration to the local system. To export the configuration from Fortinet firewall, see Export the Configuration from Fortinet Firewall.
4	Secure Firewall Migration Tool	Upload the Fortinet config file exported from Fortinet firewall, see Upload the Fortinet Configuration File.
5	Secure Firewall Migration Tool	In this step, you can specify the destination parameters for the migration. For detailed steps, see Specify Destination Parameters for the Secure Firewall Migration Tool. .
6	Secure Firewall Migration Tool	Navigate to where you downloaded the pre migration report and review the report. For detailed steps, see Review the Pre-Migration Report.
7	Secure Firewall Migration Tool	To ensure that the Fortinet configuration is migrated correctly, map the Fortinet interfaces to the appropriate threat defense interface objects, security zones, and interface groups. For detailed steps, see Map Fortinet Firewall Configurations with Secure Firewall Device Manager Threat Defense Interfaces.

	Workspace	Steps
8	Secure Firewall Migration Tool	Map the Fortinet interfaces to the appropriate security zones, see Map Fortinet Interfaces to Security Zones for detailed steps.
9	Secure Firewall Migration Tool	Optimize and review the configuration carefully and validate that it is correct and matches how you want to configure the threat defense device. For detailed steps, see Optimize, Review and Validate the Configuration to be migrated.
10	Secure Firewall Migration Tool	This step in the migration process sends the migrated configuration to the Cloud-Delivered Firewall Management Center and allows you to download the post-migration report. For detailed steps, see Push the Migrated Configuration to Management Center.
11	Local Machine	Navigate to where you downloaded the post migration report and review the report. For detailed steps, see Review the Post-Migration Report and Complete the Migration.
12	Management Center	Deploy the migrated configuration from the Cloud-Delivered Firewall Management Centerto threat defense.

The Fortinet firewall configuration is successfully migrated to the Secure Firewall Threat Defense device through the management center.

Migrate Palo Alto Networks Firewall to Secure Firewall Threat Defense with the Firewall Migration Tool in Security Cloud Control

This task enables you to migrate Palo Alto Networks firewall configurations to Secure Firewall Threat Defense using the Firewall Migration Tool, preserving your security policies while transitioning to Cisco's threat defense platform.

You can migrate configurations from your Palo Alto Networks firewall by choosing **Palo Alto Networks (6.1+)** in the **Source Firewall Vendor** drop-down and manually uploading the derived configuration file to Firewall Migration Tool. To read about the Palo Alto Networks firewall configurations that are supported for migration and the limitations around them, see Guidelines and Limitations in the *Migrating Palo Alto Networks Firewall to Secure Firewall Threat Defense with the Migration Tool* book.

Procedure

Step 1 Log in to your Security Cloud Control tenant, and in the left pane, click **Tools & Services** > **Firewall Migration ToolAdministration** > **Migration** > **Firewall Migration Tool**, and click the blue plus button to start provisioning a new migration instance.

Step 2 Launch the migration instance from Security Cloud Control and choose **Palo Alto Networks (6.1+)**.

Step 3 Export the Configuration File from your Palo Alto Networks Firewall.

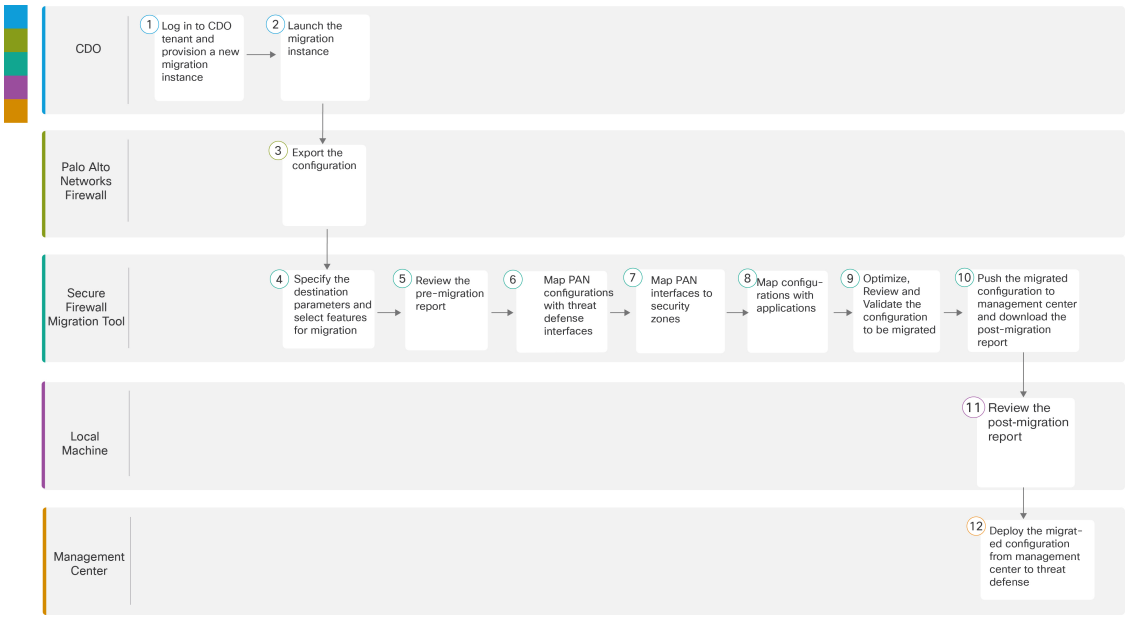
To export the configuration from Palo Alto Networks Firewall, see Export the Configuration from Palo Alto Networks.

Step 4 Select the target device for migration.

In the **Select Target** page, the Cloud-Delivered Firewall Management Center provisioned on your Security Cloud Control tenant is selected by default, and the Firepower Threat Defense devices managed by that management center are listed. You can choose the Firepower Threat Defense device you wish to migrate the configuration to, and proceed with the migration.

Note that the devices listed are displayed either as **In Use** or **Available** based on whether the device is being used in another migration instance. However, you can perform an override by clicking **Change Device Status**, selecting the device from the **In Use** list, and clicking **Continue**, which will make the device available for being selected as the target. Choosing **Proceed without FTD** pushes only NAT objects, ACLs, and port objects to the Cloud-Delivered Firewall Management Center. For more information about the commonly used ASA features and their equivalent threat defense features, see Cisco Secure Firewall ASA to Threat Defense Feature Mapping guide.

Caution
Changing the device status from **In Use** to **Available** impacts the ongoing migration instance that is using the device already. We recommend that you exercise caution when doing this.



Step 5 Specify the destination parameters for the migration.

For detailed steps, see Specify the destination parameters for the migration.

Step 6 Review the pre-migration report.

Navigate to where you downloaded the pre migration report and review the report. For detailed steps, see Review the Pre-Migration Report.

Step 7 Map PAN interfaces to threat defense interface objects, security zones, and interface groups.

To ensure that the PAN configuration is migrated correctly, map the PAN interfaces to the appropriate threat defense interface objects, security zones, and interface groups. For detailed steps, see Map PAN Firewall Configurations with Secure Firewall Management Center Threat Defense Interfaces.

Step 8 Map PAN interfaces to security zones.

For detailed steps, see Map PAN interfaces to security zones.

Step 9 Map PAN configuration to corresponding target applications.

For detailed steps, see Map Configurations with Applications.

Step 10 Optimize, review, and validate the configuration.

Optimize and review the configuration carefully and validate that it is correct and matches how you want to configure the threat defense device. For detailed steps, see Optimize, Review and Validate the Configuration to be Migrated.

Step 11 Push the migrated configuration to Cloud-Delivered Firewall Management Center.

This step in the migration process sends the migrated configuration to management center and allows you to download the post-migration report. For detailed steps, see Push the Migrated Configuration to Cloud-Delivered Firewall Management Center.

Step 12 Review the post-migration report.

Navigate to where you downloaded the post migration report and review the report. For detailed steps, see Review the Post-Migration Report and Complete the Migration.

Step 13 Deploy the migrated configuration from the Cloud-Delivered Firewall Management Center to threat defense.

Your Palo Alto Networks firewall configuration has been successfully migrated to Secure Firewall Threat Defense. The migrated configuration is now deployed and active on your target threat defense device.

Related documentation

To know more about migrating third-party firewalls using the Secure Firewall migration tool in Security Cloud Control, see the following documents based on your requirement:

- To know about the latest features and release-specific information around the Firewall migration tool, see Cisco Secure Firewall Migration Tool Release Notes.



Note Security Cloud Control hosts the latest version of the Secure Firewall migration tool.

- To migrate configurations from a Check Point firewall to threat defense, start from Export the Check Point Configuration Files in Migrating a Check Point Firewall to Threat Defense guide.
- To migrate configurations from a Palo Alto Networks firewall to threat defense, start from Export the Configuration from Palo Alto Networks Firewall in Migrating a Palo Alto Networks Firewall to Threat Defense guide.

- To migrate configurations from a Fortinet firewall to threat defense, start from Export the Configuration from Fortinet Firewall in Migrating a Fortinet Firewall to Threat Defense guide.



Important Unlike ASA and FDM-managed device migrations, you can only upload a manually extracted configuration file for migrating a third-party firewall configuration to threat defense.

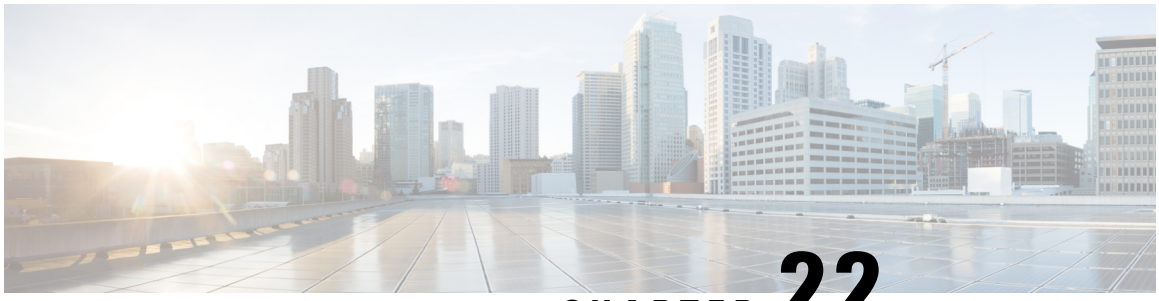
If you wish to read overall information about the Secure Firewall migration tool and all related documentation, see Cisco Secure Firewall Migration Tool.



PART VII

Monitor and Analyze

- Events in Security Cloud Control, on page 665
- Security Analytics and Logging Licenses, on page 673
- Secure Event Connectors, on page 683
- Monitor Secure Firewall ASA Events, on page 707
- Monitor Cloud-Delivered Firewall Management Center-Managed Threat Defense Device Events, on page 739
- View Events in Security Cloud Control Firewall Management, on page 751
- FTD Dashboard, on page 795



CHAPTER 22

Events in Security Cloud Control

This chapter provides information about Security Analytics and Logging (SaaS) in Security Cloud Control.

- About Security Analytics and Logging (SaaS) in Security Cloud Control, on page 665
- Event types in Security Cloud Control, on page 665
- Deprovisioning Cisco Security Analytics and Logging (SaaS), on page 671

About Security Analytics and Logging (SaaS) in Security Cloud Control

Terminology Note: In this documentation, when Cisco Security Analytics and Logging (a software as a service product) is used with Security Cloud Control for security event monitoring and analysis, you will see this integration referred to as Cisco Security Analytics and Logging (SaaS) or SAL (SaaS).

Cisco Security Analytics and Logging (SAL) allows you to capture supported types of security events from all of your firewall devices and view them in one place in Security Cloud Control. The events are stored in the Security Analytics and Logging cloud and viewable from the **Event Logging** page. The **Event Logging** page allows you to search, filter and analyze the security event data to understand which security rules are being triggered in your network.

Event types in Security Cloud Control

When filtering the security events logged in Secure Logging Analytics (SaaS), you can choose from a list of ASA, FTD, and event types that Security Cloud Control supports. From the Security Cloud Control menu, navigate **Analytics** > **Event Logging** and click the filter icon to choose events. These event types represent groups of syslog IDs. The table that follows shows which syslog IDs are included in which event type. To learn more about a specific syslog ID, you can search for it in the Cisco ASA Series Syslog Messages or the Cisco Secure Firewall Threat Defense Syslog Messages guides.

Some syslog events have the additional attribute "EventName." You can filter the events table to find events using the EventName attribute by filtering by attribute:value pairs.

See Event Name Attributes for Syslog Events.

Some syslog events will have the additional attributes "EventGroup" and "EventGroupDefinition". You will be able to filter the events table to find events using these additional attributes by filtering by attribute:value pairs.

The NetFlow events are different from syslog events. The **NetFlow** filter searches for all NetFlow event IDs that resulted in an NSEL record. Those NetFlow event IDs are defined in the Cisco ASA NetFlow Implementation Guide.

The following table describes the event types that Security Cloud Control supports and lists the syslog or NetFlow event numbers that correspond to the event types:

Filter Name	Description	Corresponding Syslog Event or Netflow Event
AAA	These are events that the system generates when failed or invalid attempts happen to authenticate, authorize, or use up resources in the network, when AAA is configured.	109001-109035 113001-113027
BotNet	These events get logged when a user attempts to access a malicious network, which might contain a malware-infected host, possibly a BotNet, or when the system detects traffic to or from a domain or an IP address in the dynamic filter block list.	338001-338310
Failover	These events get logged when the system detects errors in stateful and stateless failover configurations or errors in the secondary firewall unit when a failover occurs.	101001-101005, 102001, 103001-103007, 104001-104004, 105001-105048 210001-210022 311001-311004 709001-709007
Firewall Denied	These events get generated when the firewall system denies traffic of a network packet for various reasons, ranging from a packet drop because of the security policy to a drop because the system received a packet with the same source IP and destination IP, which could potentially mean an attack on the network. Firewall Denied events may be contained in a NetFlow and may be reported with NetFlow event IDs as well as syslog IDs.	106001, 106007, 106012, 106013, 106015, 106016, 106017, 106020, 106021, 106022, 106023, 106025, 106027

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Firewall Traffic	These are events that get logged depending on the various connection attempts in the network, user identities, time stamps, terminated sessions, and so on. Firewall Traffic events may be contained in a NetFlow and may be reported with NetFlow event IDs as well as syslog IDs.	106001-106100, 108001-108007, 110002-110003 201002-201013, 209003-209005, 215001 302002-302304, 302022-302027, 303002-303005, 313001-313008, 317001-317006, 324000-324301, 337001-337009 400001-400050, 401001-401005, 406001-406003, 407001-407003, 408001-408003, 415001-415020, 416001, 418001-418002, 419001-419003, 424001-424002, 431001-431002, 450001 500001-500005, 508001-508002 607001-607003, 608001-608005, 609001-609002, 616001 703001-703003, 726001
IPsec VPN	These events are logged in an IPsec VPN-configured firewall when mismatches occur in IPsec security associations or when the system detects an error in the IPsec packets it receives.	402001-402148, 602102-602305, 702304-702307
NAT	These events are logged in a NAT-configured firewall when NAT entries are created or deleted and when all the addresses in a NAT pool are used up and exhausted.	201002-201013, 202001-202011, 305005-305012
SSL VPN	These events are logged in an SSL VPN-configurated firewall when WebVPN sessions get created or terminated, user access errors, and user activities.	716001-716060, 722001-722053, 723001-723014, 724001-724004, 725001-725015
NetFlow	These events are logged around the IP network traffic as network packets enter and exit the interfaces, timestamps, user identities, and the amount of data transferred.	0, 1, 2, 3, 5

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Connection	You can generate events for connections as users generate traffic that passes through the system. Enable connection logging on access rules to generate these events. You can also enable logging on Security Intelligence policies and SSL decryption rules to generate connection events. Connection events contain data about the detected sessions. The information available for any individual connection event depends on several factors, but in general includes: • Basic connection properties: timestamp, source and destination IP address, ingress and egress zones, the device that handled the connection, and so on. • Additional connection properties discovered or inferred by the system: applications, requested URLs, or users associated with the connection, and so on. • Metadata about why the connection was logged: which configuration handled the traffic, whether the connection was allowed or blocked, details about encrypted and decrypted connections, and so on.	430002, 430003

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Intrusion	The system examines the packets that traverse your network for malicious activity that could affect the availability, integrity, and confidentiality of a host and its data. When the system identifies a possible intrusion, it generates an intrusion event, which is a record of the date, time, type of exploit, and contextual information about the source of the attack and its target. Intrusion events are generated for any intrusion rule set to block or alert, regardless of the logging configuration of the invoking access control rule.	430001
File	File events represent files that the system detected, and optionally blocked, in network traffic based on your file policies. You must enable file logging on the access rule that applies the file policy to generate these events. When the system generates a file event, the system also logs the end of the associated connection regardless of the logging configuration of the invoking access control rule.	430004

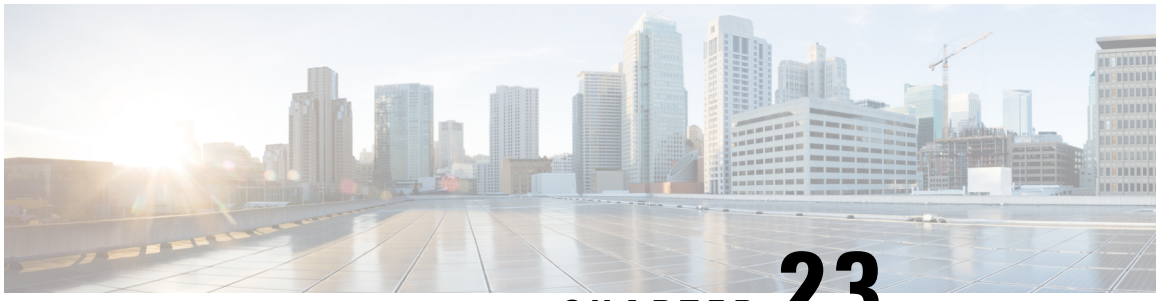
Filter Name	Description	Corresponding Syslog Event or Netflow Event
Malware	The system can detect malware in network traffic as part of your overall access control configuration. AMP for Firepower can generate a malware event, containing the disposition of the resulting event, and contextual data about how, where, and when the malware was detected. You must enable file logging on the access rule that applies the file policy to generate these events. The disposition of a file can change, for example, from clean to malware or from malware to clean. If AMP for Firepower queries the AMP cloud about a file, and the cloud determines the disposition has changed within a week of the query, the system generates retrospective malware events.	430005
Security Intelligence	Security Intelligence events are a type of connection event generated by the Security Intelligence policy for each connection that is blocked or monitored by the policy. All Security Intelligence events have a populated Security Intelligence Category field. For each of these events, there is a corresponding "regular" connection event. Because the Security Intelligence policy is evaluated before many other security policies, including access control, when a connection is blocked by Security Intelligence, the resulting event does not contain the information that the system would have gathered from subsequent evaluation, for example, user identity.	430002, 430003

Filter Name	Description	Corresponding Syslog Event or Netflow Event
AI Defense	AI Defense events provide a detailed record of activities within your AI environment, capturing interactions such as prompts submitted, responses generated, and any triggered AI Defense policy violations. These events include key information like timestamps, the application and AI model involved, the specific rule triggered, and the action taken. These event logs enable you to monitor AI usage in real time, detect threats, and enforce security policies effectively.	

Deprovisioning Cisco Security Analytics and Logging (SaaS)

If you allow your Cisco Security Analytics and Logging (SaaS) paid subscription to lapse, collection of new events stops immediately. After 90 days from expiry, you will no longer be able to view or query your existing event data. You have 180 days to renew your subscription.

If you allow the 180-day grace period to lapse, the system purges all of your event data. You can no longer view security events on the **Event Logging** page, nor have dynamic entity modeling (DEM) behavioral analytics applied to your security events and network flow data.



CHAPTER 23

Security Analytics and Logging Licenses

This chapter provides information on Security Analytics and Logging licenses.

- Security Analytics and Logging licenses, on page 673

Security Analytics and Logging licenses

Security Analytics and Logging subscriptions offer flexible options for managing firewall logs in Security Cloud Control, including per-device licenses and customizable log storage and retention. Choose between Essentials, Advantage, and Premier tiers to meet operational and compliance requirements, with retention periods up to five years and storage capacities up to 10 TB.

Security Analytics and Logging subscription overview

You can combine SAL with your Security Cloud Control subscription. When managing your firewalls with Security Cloud Control, you can obtain Security Analytics and Logging entitlement in these ways:

- Device management with unlimited logging: This option provides a per-device license. It includes device management capabilities for your firewall device and unlimited log storage for a rolling period of 90 days.
- Device management only with optional cloud logging: This option involves purchasing a per-device license for management only. You can then add Security Analytics and Logging as a separate cloud logging subscription. This allows you to customize logging data storage and log retention based on your specific operational and compliance needs.

90-day free trial

To accurately estimate your daily ingest rate, log in to Security Cloud Control and navigate to the **Events & Logs** > **Events** > **Event Logging** tab to request a 90-day trial. You can purchase the desired subscription plan to continue the service by reviewing the instructions in the Security Cloud Control Firewall Management Ordering Guide.

Security Analytics and Logging paid subscription tiers

If you choose not to use device management with unlimited logging option, you can purchase logging capacity separately. This standalone Security Analytics and Logging subscription provides greater flexibility, longer default retention, and increased storage entitlements. The default minimum retention period for these subscription tiers is 1 year.

Select these flexible Security Analytics and Logging subscription tiers if:

- You have already purchased your firewall devices as part of a different order.
- You have specific logging estimates and want to buy a tier based on a fixed amount of ingest, storage, and logging retention.
- You want a log retention period that is more than 90 days.

Security Analytics and Logging subscription is categorized into three tiers—Essentials, Advantage, and Premier. This table lists the storage capacities and log retention periods for each tier.

Description	Retention Period	Storage Limit	Subscription Term
Cisco SAL Essentials Subscriptions	1, 2, or 3 years	2 TB	0 to 5 years
Cisco SAL Advantage Subscriptions	1, 2, or 3 years	4 TB	0 to 5 years
Cisco SAL Premier Subscriptions	1, 2, or 3 years	10 TB	0 to 5 years

For more information about the subscription plans, refer to the Security Cloud Control Firewall Management Ordering Guide.

Note For paid subscriptions, Security Analytics and Logging automatically manages your event data to ensure that it aligns with your licensed retention period. Security Analytics and Logging removes event data that is older than your specified retention period on a daily basis, and ensures that you always retain access to all event data within your full retention period.

Estimate your daily ingest rate

Purchase a subscription plan that matches the number of events the Cisco cloud receives from your onboarded firewall devices on a daily basis. This is called your *daily ingest rate*. You can use the Logging Volume Estimator tool to estimate your daily ingest rate and as that rate changes you can update your subscription plan.

Subscribing to a Security Analytics and Logging license

Security Analytics and Logging trial provides full feature access for 90 days, allowing you to evaluate event logging performance, estimate daily ingest rates, and determine storage requirements. Gain valuable insights to select the optimal subscription and ensure continuous access to your firewall security data in the Cisco cloud.

Purchase a data storage plan that matches the daily event volume your onboarded security devices send to Cisco cloud. This volume is referred to as your daily ingest rate. Before making a purchase, participate in a free trial of Security Analytics and Logging to accurately estimate your daily ingest rate.

Summary

The key components involved in the Security Analytics and Logging subscription process are:

- Customer: Starts trial, evaluates performance, and determines subscription requirements
- Cisco representative or authorized partner: Facilitates subscription purchase
- Security Cloud Control administrator: Claims and activates subscription
- Trial period: 90 days with full feature access for evaluation
- Grace periods: 90 days for trial data retention, 180 days for paid subscription data retention

Workflow

These are the stages of subscribing to a Security Analytics and Logging license:

1. The customer starts a Security Analytics and Logging trial subscription to evaluate requirements and performance.
   - With this trial plan, you gain access to all Security Analytics and Logging features for 90 days.
   - During the 90-day trial period, your onboarded firewalls send events to Security Analytics and Logging. Monitor your event ingestion rates, understand your storage requirements, and evaluate performance. This data helps you to plan and select the most appropriate paid subscription.
   - If you activate a paid Security Analytics and Logging subscription while a trial is active, Security Cloud Control replaces the trial license for the product instance with the paid license and ends the trial.
   - If you choose not to apply the paid subscription to the trial, event ingestion automatically stops after 90 days. After this, you cannot access Security Analytics and Logging features. However, your existing log data remains in the Security Analytics and Logging cloud for an additional 90 days from the trial expiry date.



Note If you do not subscribe to a paid Security Analytics and Logging license within this 90-day grace period, all your trial data is permanently deleted.

   This stage enables the customer to gain hands-on experience with Security Analytics and Logging capabilities and accurately determine their subscription requirements.

2. The customer orders a paid Security Analytics and Logging subscription based on trial insights.
   - Use the insights that you gained from your trial (daily ingest rate, required retention, storage volume) to determine the most suitable Security Analytics and Logging subscription plan.
   - Work with your Cisco representative or authorized partner to purchase the appropriate Security Analytics and Logging subscription.

   This stage ensures the customer selects a subscription plan that matches their actual usage requirements and establishes the commercial relationship.

3. The Security Cloud Control administrator claims the Security Analytics and Logging subscription to activate it.

After you purchase a new Security Analytics and Logging subscription, you receive a claim code to activate it within Security Cloud Control. A welcome email containing your subscription claim code is automatically sent to the Provisioning Contact you specified during the purchasing process. If you included an End Customer contact, they also receive a copy. You will receive this email on the requested start date of your subscription.

A Security Cloud Control administrator uses the claim code to activate the subscription for their organization. For detailed instructions on claiming and activating subscriptions, refer to Claim a Subscription.

This stage completes the activation process and makes the paid subscription services available to the organization.

4. The customer maintains their Security Analytics and Logging subscription through timely renewal.

   Maintaining an active Security Analytics and Logging subscription ensures continuous logging and access to your historical data.

   - If your Security Analytics and Logging subscription expires without renewal, event ingestion from your firewalls stops immediately.
   - You can continue to view and search existing event data for 90 days after the subscription expires. After 90 days, event data is no longer accessible.
   - Your existing data remains in the Security Analytics and Logging cloud for a 180-day grace period from the subscription expiry date.
   - If the Security Analytics and Logging subscription is not renewed within this 180-day grace period, all your event data is permanently deleted from the Security Analytics and Logging cloud.

   This stage ensures continuous service availability and prevents data loss through proactive subscription management.

Result

The subscription process results in continuous access to Security Analytics and Logging logging services, properly sized to match actual usage requirements, with established renewal processes to prevent service interruption and data loss.

View Security Analytics and Logging license information

Monitor your Security Analytics and Logging license to track storage limits and retention periods to optimize event data management and prevent overages.

View your Security Analytics and Logging license information such as the entitled monthly storage limit and the event storage retention period. If you do not have a separate Security Analytics and Logging license and data plan, you see the 90-day rolling data storage details in the licensing information.

Procedure

Step 1 Choose **Settings** > **Logging SettingsAdministration** > **Logging Settings**.

Step 2 Click **View Logging Storage Usage**.

Tip

Alternatively, navigate to **Events & Logs** > **Events** > **Event Logging** and then click the **View Dashboard** button to view the Security Analytics and Logging license information.

The **Event Logging Overview** dashboard provides a comprehensive overview of your Security Analytics and Logging license subscription:

- **Retention policy**: Displays the event log retention period according to your subscription. Event data that is older than your retention period is removed daily, and you always retain access to all event data within your full retention period.
- **Storage capacity**: Displays the total entitled data under your Security Analytics and Logging license, the amount of storage currently used, and the remaining available storage.

The Security Analytics and Logging license information is displayed, showing your entitled monthly storage limit, event storage retention period, and current usage details.

View Security Analytics and Logging Storage usage and event ingest rate

Gain insights into storage usage and event trends in Security Cloud Control with interactive dashboards. Regular analysis helps you optimize event logging, adjust storage settings, prevent overages, and maintain efficient compliance and performance across your security environment.

View the current Security Analytics and Logging storage utilization and analyze event logging trends. You can analyze the storage utilization trends by event type, device type, and individual devices to gain deeper insights into storage utilization patterns. Use the data visualizations for quick and easy analysis. This helps you assess the current storage capacity and take measures to reduce the logging rate if the storage utilization approaches the limits that are specified in your Security Analytics and Logging license.

Procedure

Step 1 Choose **Administration** > **Logging Settings**.

Step 2 Click **View Logging Storage Usage**.

Tip
Alternatively, navigate to **Events & Logs** > **Events** > **Event Logging** from the left navigation bar, and then click the **View Dashboard** button to view the Security Analytics and Logging storage usage and event ingestion trends.

Step 3 Use these dashboards to customize and analyze storage utilization and gain insights into event logging trends in your firewall deployment:

- **Usage Trends**: Displays the event logging storage usage for the last 12 months. Hover over a bar to see the data usage for the corresponding month.
- **Events per second (EPS) trends**: Displays the event ingest rate for the onboarded devices. Customize your events per second trends view for a specific time period or device to get more granular data. You can filter the data for the past 1 week, 2 weeks, 3 weeks, or 1 month.

Note

The device drop-down list displays the managed firewall devices that are sending events to the Cisco Security Cloud.

- **Utilization by event type trends**: Displays event data storage used, in bytes per day, for different event types. Use this widget to monitor storage use by event types and identify surges, if any, or unusual changes in storage use for specific event types. This insight enables you to adjust logging settings for a specific event type and manage storage use.
- **Utilization by device type trends**: Displays event data storage used, in bytes per day, for each managed device type. Use this widget to monitor storage use by the device type and identify surges, if any, or unusual changes in storage use for a specific type of device.
- **Utilization by device trends**: Displays event data storage used, in bytes per day, for each security device that sends events to Security Cloud Control. This widget focuses on devices with storage use exceeding the average bytes per second value, showing only the top five devices to improve usability. Use this widget to monitor storage use for each device and identify surges or unusual changes. This insight allows you to adjust logging settings for specific devices and manage storage use effectively.

You can view storage utilization and event logging trends across multiple dashboards, allowing you to monitor usage patterns and make informed decisions about storage settings and event logging configurations.

Monitor Security Analytics and Logging service availability

Monitor the availability and health of Security Analytics and Logging(SaaS) service, review Firewall Threat Defense device event logging status, and determine when Security Analytics and Logging last received events from managed devices.



Note The **Service Status** tab currently supports Firewall Threat Defense devices.

Before you begin

Enable the managed Firewall Threat Defense devices to send events to the Security Analytics and Logging cloud so you can view meaningful device logging status and last-event details.

Procedure

Step 1 Choose **Settings** > **Logging SettingsAdministration** > **Logging Settings**.

Step 2 Click **View Logging Storage Usage**.

Tip
Alternatively, navigate to **Events & Logs** > **Events** > **Event Logging** and then click the **View Dashboard** button to view the Security Analytics and Logging service status.

Step 3 Click the **Service Status** tab.

Step 4 Review the **SAL Service Availability** widget to check the current Security Analytics and Logging service status.

If the Security Analytics and Logging service status displays **Degraded**, your Security Analytics and Logging service is affected and event ingestion might be delayed or disrupted.

Step 5 Check the **Last Event Received** widget to determine when Security Analytics and Logging last received an event from a device.

Step 6 Review the **Firewall Logging Status** widget to check Firewall Threat Defense device event logging status.

- **Connected**: Indicates the number of Firewall Threat Defense devices that are enabled to send events to the Security Analytics and Logging.
- **Disabled**: Indicates the number of Firewall Threat Defense devices that are disabled from sending events to the Security Analytics and Logging.

Step 7 In the **Firewall Details** list, check when each Firewall Threat Defense device last sent an event to Security Analytics and Logging.

Use this information along with **SAL Service Availability** and **Last Event Received** widgets to identify whether events might be delayed or not ingested.

If Firewall Threat Defense devices are disabled from sending events, review the device logging configuration. If the Security Analytics and Logging service status is **Unavailable** or **Degraded**, or if event ingestion appears delayed or disrupted, contact Cisco TAC for assistance.

You have reviewed the Security Analytics and Logging service status, device logging configuration, and last event timestamps to ensure proper event ingestion and identify any potential issues with the service or device connectivity.

Extend event storage duration and increase event storage capacity

Upgrade your Security Analytics and Logging license to extend event storage from the default 90 days to up to three years. Enhancing storage capacity ensures long-term data retention, compliance, and improved security visibility for network monitoring.

Perform this task when your organization needs increased event storage or retention.

Procedure

Step 1 Log in to your account on Cisco Commerce.

Step 2 Select your Security Cloud Control PID.

Step 3 Follow the prompts to upgrade the duration or capacity of your storage.

The increased cost will be prorated based on the term remaining on your existing license. See the Guidelines for Quoting Cisco Defense Orchestrator Products for detailed instructions.

Your Security Analytics and Logging license is upgraded with extended event storage duration and increased storage capacity based on your selected options.

View Security Analytics and Logging alerts

Monitor and address Security Analytics and Logging configuration and event issues to maintain security compliance and prevent data loss.

View alerts and notifications for the Security Analytics and Logging configurations and event settings for the managed firewall devices.

Procedure

Step 1 Choose **Settings** > **Logging SettingsAdministration** > **Logging Settings**.

Step 2 Click the **View Logging Storage Usage** button.

Tip
Alternatively, navigate to **Events & Logs** > **Events** > **Event Logging** from the left navigation bar, and then click **View Dashboard** to view the Security Analytics and Logging license information.

The **Alerts and Notifications** section displays alerts about the settings that impact event logging. These alerts enable you to take action to resolve any issues. Some of these settings include:

- Sending events to cloud setting is disabled.
- Sending events to the cloud setting is disabled at device level.
- Secure Event Connector becomes unavailable.
- Increase in events ingestion rate.
- Security Analytics and Logging license is expired or the allotted data storage is exceeded.

The **Alerts and Notifications** section displays current alerts for Security Analytics and Logging configurations and event settings, enabling you to identify and resolve issues that may impact event logging.

Frequently asked questions about Security Analytics and Logging license

Learn which events count toward your Security Analytics and Logging data allotment, how to manage storage limits, what happens if your license expires, and how retention periods affect long-term data storage. Gain practical tips to optimize storage and maintain continuous access to your security event data.

Which data gets counted against my Security Analytics and Logging allotment?

All events sent to the Cisco cloud directly or to the Secure Event Connector accumulate in Security Analytics and Logging and count against your data allotment.

Filtering the events viewer does not decrease the number of stored events in Security Analytics and Logging. It only reduces the number of events you see in the events viewer.

We're using up our storage allotment quickly. what should i do?

Here are two approaches to address that problem:

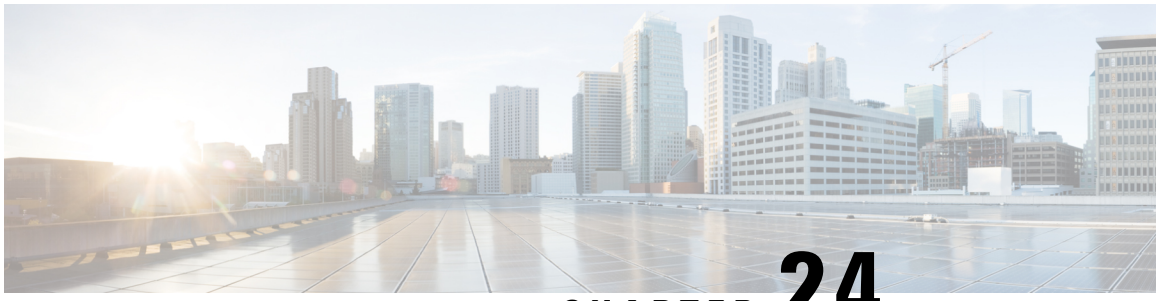
- Request more storage.
- Consider reducing the number of rules that log events. You can log events from SSL policy rules, security intelligence rules, access control rules, intrusion policies, and file and malware policies. Review your current logging settings to determine if you need to log events from all the rules and policies that you have configured.

What happens to my data if my Security Analytics and Logging license expires?

If your paid Security Analytics and Logging license expires, event ingestion from your firewalls stops immediately. However, your existing data remains accessible in the Security Analytics and Logging cloud for a 180-day grace period. If you renew your paid license during this grace period, your service continues without interruption. If you do not renew within these 180 days, all your data is permanently deleted.

If I purchase a Security Analytics and Logging subscription with a 1-year retention period and a 5-year term, will my data be stored for all 5 years?

The retention period defines how long each log is stored. With a 1-year retention period, only the most recent 1-year log data is available at any given time. Log data older than 1 year is overwritten or deleted when new data is collected. A 5-year term means that data for that duration will continue to be ingested, but the retention limit is applicable to the log data itself.



CHAPTER 24

Secure Event Connectors

This chapter provides information about secure event connectors.

- Secure event connectors, on page 683
- Secure event connector installation, on page 684
- Secure event connector removal, on page 704
- Finding your device's TCP, UDP, and NSEL port used for secure logging analytics (SaaS), on page 705

Secure event connectors

A Secure Event Connector (SEC) is a component of the Security Analytics and Logging SaaS solution that

- receives events from ASA , and FDM-managed devices
- forwards events to the Cisco cloud for centralized analysis, and
- enables display of events on the **Event Logging** page in Security Cloud Control.

SEC deployment options

The SEC is installed on a Secure Device Connector deployed in your network, on its own Security Cloud Control Connector virtual machine deployed in your network, or on an AWS Virtual Private Cloud (VPC).

Secure Event Connector ID location:

1. From the Security Cloud Control menu on the left, choose **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.
2. Click the SEC you wish to identify.
3. The SEC ID is the ID listed above the Tenant ID in the Details pane.

Note You may need the ID of the SEC when working with Cisco Technical Assistance Center (TAC) or other Security Cloud Control Support.

Secure event connector installation

A Secure Event Connector installation is a deployment process that enables installation of SECs on a tenant with or without an SDC configuration.

Installation options

You can install one SEC on the same virtual machine as a Secure Device Connector, if you have one; or you can install the SEC on it's own Security Cloud Control Connector virtual machine that you maintain in your network.

Install a secure event connector on an SDC virtual machine

The purpose of this task is to install a Secure Event Connector on an existing SDC virtual machine to enable centralized event logging and analysis.

The Secure Event Connector (SEC) receives events from ASA and FDM-managed devices and forwards them to the Cisco cloud. Security Cloud Control displays the events on the **Event Logging** page enabling you to analyze the security events from all devices in one place.

You can install one SEC on the same virtual machine as a Secure Device Connector, if you have one; or you can install the SEC on it's own Security Cloud Control Connector virtual machine that you maintain in your network.

This article describes installing an SEC on the same virtual machine as an SDC. If you want to install more SECs see Installing an SEC using a Security Cloud Control image, on page 686 or SEC installation using VM images, on page 692.

Before you begin

- Purchase the Cisco Security and Analytics Logging license. If you want to try Cisco Security and Analytics Logging out first, log in to Security Cloud Control, and on the main navigation bar, choose **Events & Logs** > **Events** > **Event Logging** and click **Request Trial**.
- Make sure the SDC is communicating with Security Cloud Control:
  1. In the left pane, click **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.
  2. Make sure that the SDC's last heartbeat was less than 10 minutes prior to the installation of the SEC and that the SDC's status is active.
- System Requirements - Assign additional CPUs and memory to the virtual machine running the SDC:
  - CPU: Assign an **additional** 4 CPUs to accommodate the SEC to make a total of 6 CPU.
  - Memory: Assign an **additional** 8 GB of memory for the SEC to make a total of 10 GB of memory.

    After you have updated the CPU and memory on the VM to accommodate the SEC, power on the VM and ensure that the Secure Connectors page indicates that the SDC is in the "Active" state.

Follow these steps to install a Secure Event Connector on an SDC virtual machine:

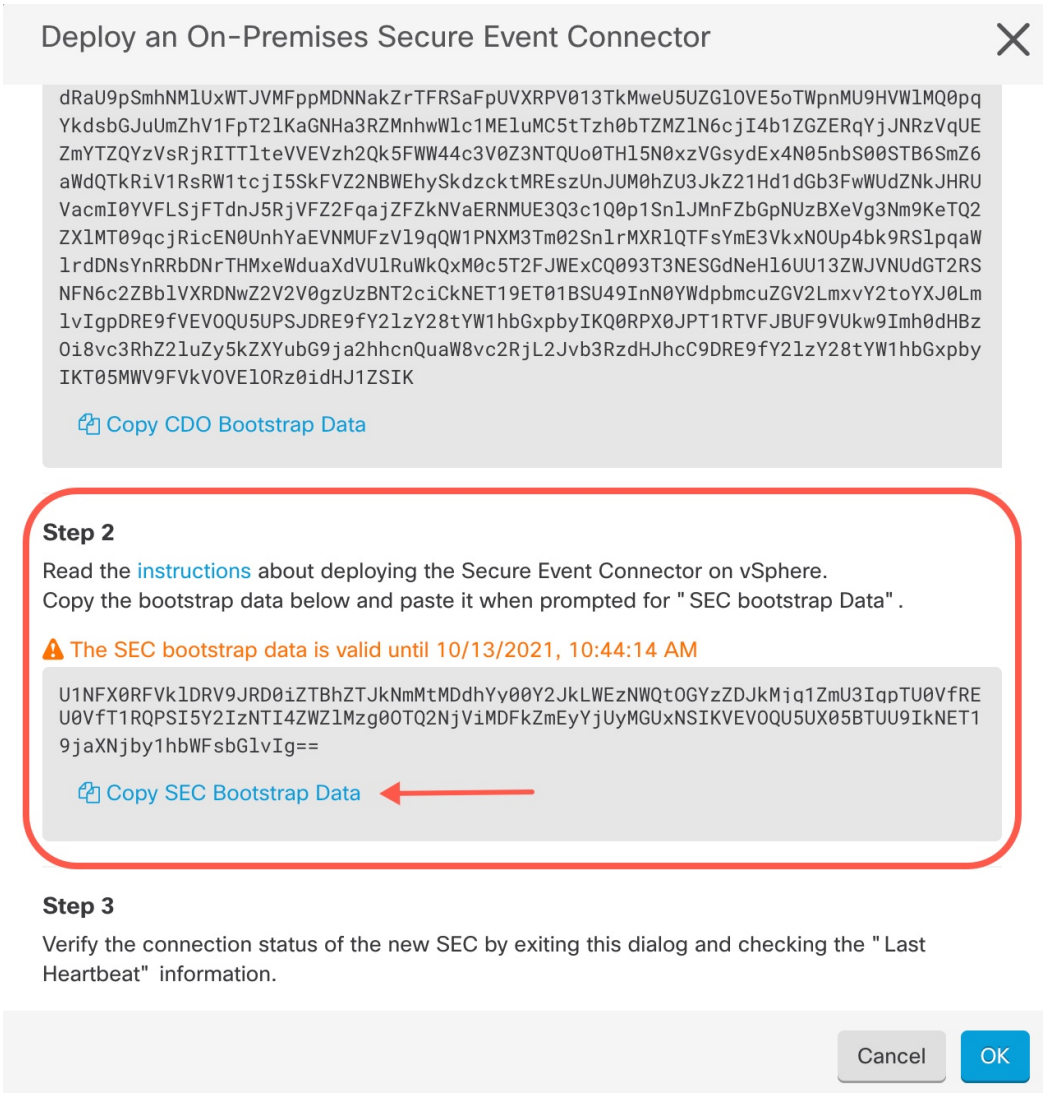
Procedure

Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, click **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Click the + icon and then click **Secure Event Connector**.

Step 4 Skip Step 1 of the wizard and go to Step 2. In step 2 of the wizard, click the link to **Copy SEC Bootstrap Data**.



Step 5 Open a terminal window and log into the SDC as the "cdo" user.

Step 6 Once logged in, switch to the "SDC" user. When prompted for a password, enter the password for the "cdo" user.

Example:

```
[cdo@sdc-vm ~]$ sudo su sdc
[sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

Step 7 At the prompt, run the **SEC.sh setup** script:

Example:

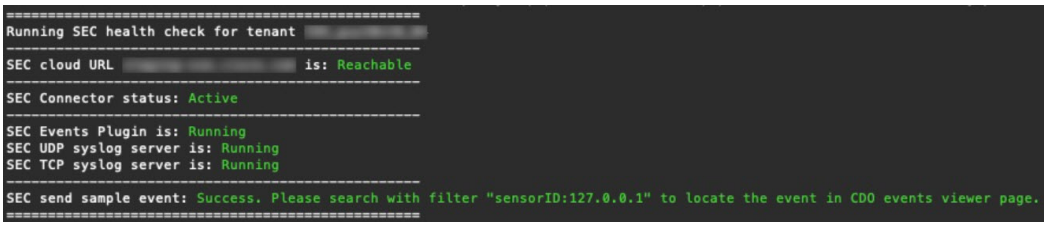
```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 8 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

Example:

```
Please copy the bootstrap data from Setup Secure Event Connector page of Security Cloud
Control: KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the SEC.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "SEC-health-check."



Step 9 Determine if the VM on which the SDC and SEC are running needs additional configuration:

- If you installed your SDC on your own virtual machine, continue with Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created, on page 698.
- If you installed your SDC using a Security Cloud Control image, continue to "What to do Next."

The Secure Event Connector is now installed on your SDC virtual machine and is ready to receive events from ASA devices and forward them to the Cisco cloud for analysis in the Event Logging page.

Installing an SEC using a Security Cloud Control image

Installing an SEC using a Security Cloud Control image is a deployment process that

- enables the Secure Event Connector (SEC) to forward events from ASA and FTD devices to the Cisco cloud for viewing in the **Event Logging** page
- allows installation of multiple SECs on a tenant to distribute event forwarding workload across different locations, and
- requires a two-part process involving Security Cloud Control Connector installation and SEC configuration.

Installation process

Installing an SEC is a two-part process:

1. Install a Security Cloud Control Connector, to Support a Secure Event Connector, Using a Security Cloud Control VM Image, on page 687 You need one Security Cloud Control Connector for every SEC you install. The Security Cloud Control Connector is different than a Secure Device Connector (SDC).
2. Install the Secure Event Connector on your Security Cloud Control Connector Virtual Machine, on page 700.

Note If you want to create a Security Cloud Control Connector by creating your own VM, see Install Multiple SECs for Your Tenant Using a VM Image you Create.

What to do next:

Continue with Install a Security Cloud Control Connector, to Support a Secure Event Connector, Using a Security Cloud Control VM Image, on page 687

Install a Security Cloud Control Connector, to Support a Secure Event Connector, Using a Security Cloud Control VM Image

Install a Security Cloud Control Connector on a virtual machine to provide the platform for deploying a Secure Event Connector that will handle security event logging and analytics.

This task is performed when you need to set up a Security Cloud Control Connector as the foundation for a Secure Event Connector deployment in your network infrastructure.

Before you begin

- Purchase the Cisco Security and Analytics Logging license.

  If you would rather, you can request a trial version of Security Analytics and Logging by logging in to Security Cloud Control, and on the main navigation bar, choose **Events & Logs** > **Events** > **Event Logging** and click **Request Trial**.

- Security Cloud Control requires strict certificate checking and does not support Web/Content Proxy inspection between the Security Cloud Control Connector and the Internet. If using a proxy server, disable inspection for traffic between the Security Cloud Control Connector and Security Cloud Control.
- **The** Security Cloud Control **Connector installed in this process must have full outbound access to the Internet on TCP port 443.**
- Security Cloud Control supports installing its Security Cloud Control Connector VM OVF image using the vSphere web client or the ESXi web client.
- Security Cloud Control does not support installing the Security Cloud Control Connector VM OVF image using the VM vSphere desktop client.
- ESXi 5.1 hypervisor.
- System requirements for a VM intended to host only a Security Cloud Control Connector and an SEC:
  - VMware ESXi host needs 4 vCPU.
  - VMware ESXi host needs a minimum of 8 GB of memory.
  - VMware ESXi requires 64GB disk space to support the virtual machine depending on your provisioning choice.

- Gather this information before you begin the installation:
  - Static IP address you want to use for your Security Cloud Control Connector VM.
  - Passwords for the **root** and Security Cloud Control users that you create during the installation process.
  - The IP address of the DNS server your organization uses.
  - The gateway IP address of the network the SDC address is on.
  - The FQDN or IP address of your time server.
- The Security Cloud Control Connector virtual machine is configured to install security patches on a regular basis and in order to do this, opening port 80 outbound is required.

Follow these steps to install a Security Cloud Control Connector using a VM image:

Procedure

Step 1 Log on to the Security Cloud Control tenant you are creating the Security Cloud Control Connector for.

Step 2 In the left pane, click **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Click the + icon and then click **Secure Event Connector**.

Step 4 In Step 1, click **Download the Security Cloud Control Connector VM image**. This is a special image that you install the SEC on. Always download the Security Cloud Control Connector VM to ensure that you are using the latest image.



Step 5 Extract all the files from the .zip file. They will look similar to these:

- Security Cloud Control-SDC-VM-ddd50fa.OVF
- Security Cloud Control-SDC-VM-ddd50fa.mf
- Security Cloud Control-SDC-VM-ddd50fa-disk1.vmdk

Step 6 Log on to your VMware server as an administrator using the vSphere Web Client.

Note
Do not use the VM vSphere desktop client.

Step 7 Deploy the on-premises Security Cloud Control Connector virtual machine from the OVF template by following the prompts. (You will need the .OVF, .mf, and .vdk files to deploy the template.)

Step 8 When the setup is complete, power on the VM.

Step 9 Open the console for your new Security Cloud Control Connector VM.

Step 10 Login as the Security Cloud Control user. The default password is **adm123**.

Step 11 At the prompt type **sudo SDC-onboard setup**

Example:

```
[cdo@localhost ~]$ sudo sdc-onboard setup
```

Step 12 When prompted, enter the default password for the Security Cloud Control user: **adm123**.

Step 13 Follow the prompts to create a new password for the **root** user.

Step 14 Follow the prompts to create a new password for the Security Cloud Control user.

Step 15 Follow the prompts to enter your Security Cloud Control domain information.

Step 16 Enter the static IP address you want to use for the Security Cloud Control Connector VM.

Step 17 Enter the gateway IP address for the network on which the Security Cloud Control Connector VM is installed.

Step 18 Enter the NTP server address or FQDN for the Security Cloud Control Connector.

Step 19 When prompted, enter the information for the Docker bridge or leave it blank if it is not applicable and press <Enter>.

Step 20 Confirm your entries.

Step 21 When prompted "Would you like to setup the SDC now?" enter **n**.

Step 22 Create an SSH connection to the Security Cloud Control Connector by logging in as the Security Cloud Control user.

Step 23 At the prompt type **sudo SDC-onboard bootstrap**

Example:

```
[cdo@localhost ~]$ sudo sdc-onboard bootstrap
```

Step 24 When prompted, enter the Security Cloud Control user's password.

Step 25 When prompted, return to Security Cloud Control and copy the Security Cloud Control bootstrap data, then paste it into your SSH session. To copy the Security Cloud Control bootstrap data:

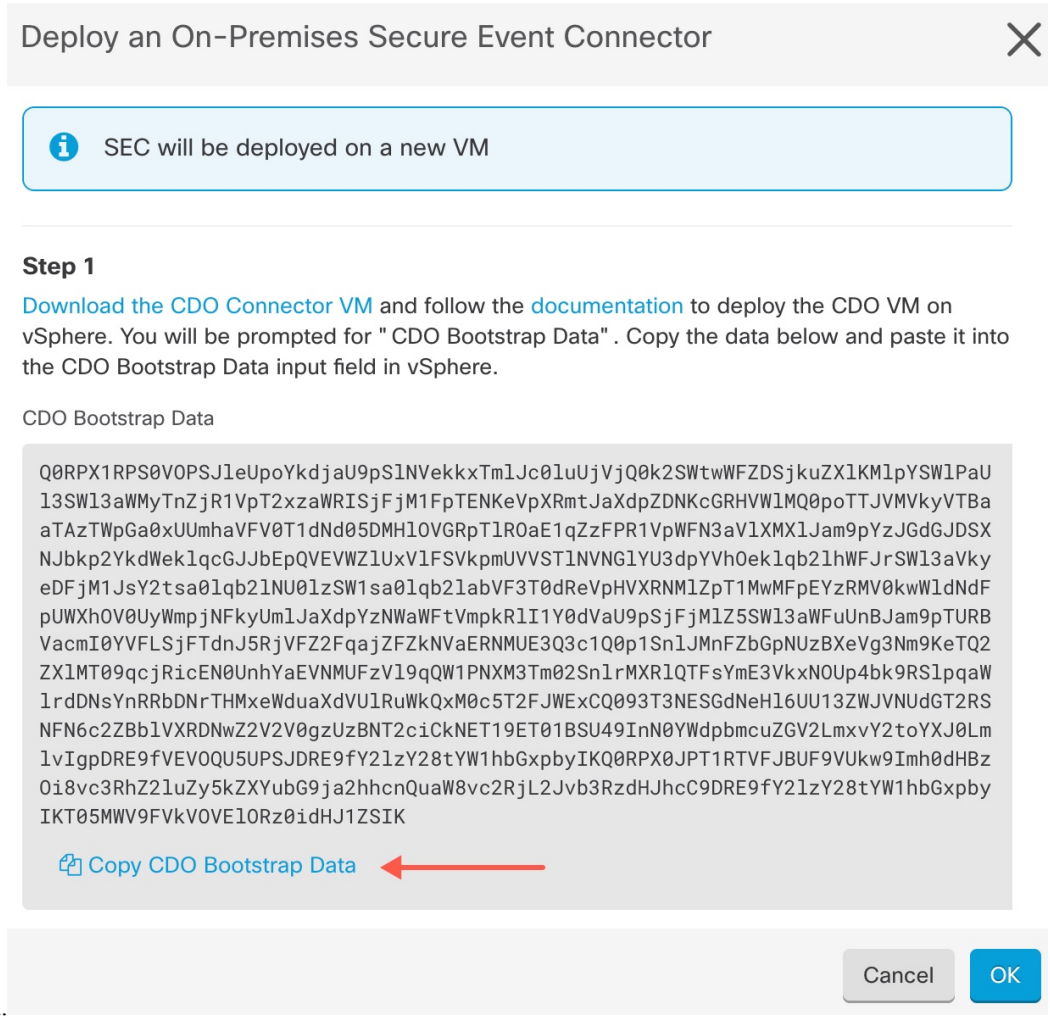
a. Log into Security Cloud Control.

b. In the left pane, click **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

c. Select the Secure Event Connector which you started to onboard. The status should show, "Onboarding."

d. In the **Actions** pane, click **Deploy an On-Premises Secure Event Connector**.

e. Copy the Security Cloud Control Bootstrap Data in step 1 of the dialog box.



Step 26 When prompted, **Would you like to update these settings?** enter **n**.

Step 27 Return to the **Deploy an On-Premises Secure Event Connector** dialog in Security Cloud Control and click **OK**. In the **Secure Connectors** page, you will see your Secure Event Connector is in the yellow Onboarding state.

Continue to Install the Secure Event Connector on the Security Cloud Control Connector VM, on page 690.

Your Security Cloud Control Connector VM is successfully installed and configured, with the Secure Event Connector in an onboarding state ready for the next installation phase.

Install the Secure Event Connector on the Security Cloud Control Connector VM

This task enables secure event logging by installing and configuring the Secure Event Connector on your Security Cloud Control Connector VM to establish communication between on-premises devices and the cloud-based logging service.

The Secure Event Connector enables secure logging analytics for your security devices by creating a secure tunnel between your on-premises environment and the cloud logging service. This connector must be properly installed and configured to ensure events are successfully transmitted and logged.

Before you begin

You should have installed Security Cloud Control Connector VM as described inInstall a Security Cloud Control Connector, to Support a Secure Event Connector, Using a Security Cloud Control VM Image, on page 687 .

Follow these steps to install the Secure Event Connector on the Security Cloud Control Connector VM:

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, choose **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Select the Security Cloud Control Connector that you onboarded above. In the Secure Connectors table, it will be called a Secure Event Connector and it should still be in the "Onboading" status.

Step 4 Click **Deploy an On-Premises Secure Event Connector** in the Actions pane on the right.

Step 5 In **step 2** of the wizard, click the link to **Copy SEC bootstrap data**.

Step 6 Create an SSH connection to the Security Cloud Control Connector and log in as the **CDO** user.

Step 7 Once logged in, switch to the **sdc** user. When prompted for a password, enter the password for the "Security Cloud Control" user. Here is an example of those commands:

```
[cdo@sdc-vm ~]$ sudo su sdc
 [sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

Step 8 At the prompt, run the SEC.sh setup script:

```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 9 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

```
Please copy the bootstrap data from Setup Secure Event Connector page of CDO:
KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
 RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the SEC.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "SEC-health-check."



If you receive the success message return to Security Cloud Control and click **Done on the Deploy an ON-Premise Secure Event Connector** dialog box.

Return to Implement secure logging analytics (SaaS) for ASA devices, on page 710 .

The Secure Event Connector is successfully installed and configured on the Security Cloud Control Connector VM. The connector establishes a secure communication channel for event logging, and a health check event appears in the Event Log confirming proper operation.

Deploy secure event connector on ubuntu virtual machine

Deploy the Secure Event Connector on your Ubuntu VM to enable event collection and management through CDO.

The Secure Event Connector allows you to collect and forward security events from your network devices to CDO for centralized monitoring and analysis. This deployment process requires bootstrap data from CDO to establish the secure connection.

Before you begin

Follow these steps to deploy Secure Event Connector on Ubuntu Virtual Machine:

Procedure

Step 1 Log on to Security Cloud Control.

Step 2 From the left pane, **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Click the  icon and then click **Secure Event Connector**.

Step 4 Copy the SEC bootstrap data in step 2 on the window to a notepad.

Step 5 Execute the following commands:

```
[sdc@vm]:~$sudo su sdc
```

```
sdc@vm:/home/user$ cd /usr/local/cdo/toolkit
```

When prompted, enter the SEC bootstrap data that you have copied.

```
sdc@vm:~/toolkit$ ./sec.sh setup
Please input the bootstrap data from Setup Secure Event Connector page of CDO:
Successfully on-boarded SEC
```

It may take a few minutes for the Secure Event Connector to become "Active" in Security Cloud Control.

The Secure Event Connector is successfully deployed and becomes "Active" in CDO, enabling event collection and forwarding from your network devices.

SEC installation using VM images

A SEC installation using VM images is a deployment method that

- forwards events from ASA and FTD to the Cisco cloud so that you can view them in the **Event Logging** page in Security Cloud Control

- allows installation of multiple Secure Event Connectors on your tenant to direct events from your ASAs and FDM-managed devices to any of the SECs you install, and
- enables distribution of event forwarding work across different regions by having SECs installed in different locations.

Installation process requirements

Installing multiple SECs using your own VM image requires completion of these steps:

1. Install a Security Cloud Control Connector to Support an SEC Using Your VM Image , on page 693
2. Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created, on page 698
3. Install the Secure Event Connector

Note Using a Security Cloud Control VM image for the Security Cloud Control Connector is the easiest, most accurate, and preferred method of installing a Security Cloud Control connector. If you want to use that method, see Installing an SEC using a Security Cloud Control image, on page 686.

Continue to Install a Security Cloud Control Connector to Support an SEC Using Your VM Image , on page 693 to begin the installation process.

Install a Security Cloud Control Connector to Support an SEC Using Your VM Image

To install and configure a Secure Event Connector (SEC) on a virtual machine so it can securely transmit event data to Cisco Security Analytics and Logging (SaaS). This ensures proper integration and secure communication between your organization's environment and Cisco's security analytics platform.

The Security Cloud Control Connector VM is a virtual machine on which you install an SEC. The purpose of the Security Cloud Control Connector is solely to support an SEC for Cisco Security Analytics and Logging (SaaS) customers.

This is the first of three steps you need to complete in order install and configure your Secure Event Connector (SEC). After this procedure, you need to complete the following procedures:

- Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created, on page 698
- Install the Secure Event Connector

Before you begin

- Purchase a Security and Analytics Logging (SaaS) subscription plan. For more information about the subscription plans, refer to the Security Cloud Control Firewall Management Ordering Guide .

  If you would rather, you can request a trial version of Security Analytics and Logging by logging in to Security Cloud Control , and on the main navigation bar, choose **Events & Logs** > **Events** > **Event Logging** and click **Request Trial** .
- Security Cloud Control requires strict certificate checking and does not support a Web/Content Proxy between the Security Cloud Control Connector and the Internet.

- **The Security Cloud Control Connector must have full outbound access to the Internet on TCP port 443.**
- VMware ESXi host installed with vCenter web client or ESXi web client.

Note We do not support installation using the vSphere desktop client.

- ESXi 5.1 hypervisor.
- Ubuntu 22.04 and Ubuntu 24.04.
- System requirements for a VM to host only a Security Cloud Control Connector and an SEC:
  - CPU: Assign 4 CPUs to accommodate the SEC.
  - Memory: Assign 8 GB of memory for the SEC.
  - Disk Space: 64 GB
- Users performing this procedure should be comfortable working in a Linux environment and using the **vi** visual editor for editing files.
- Gather this information before you begin the installation:
  - Static IP address you want to use for your Security Cloud Control Connector.
  - Passwords for the **root** and **Security Cloud Control** users that you create during the installation process.
  - The IP address of the DNS server your organization uses.
  - The gateway IP address of the network the Security Cloud Control Connector address is on.
  - The FQDN or IP address of your time server.
- The Security Cloud Control Connector virtual machine is configured to install security patches on a regular basis and in order to do this, opening port 80 outbound is required.
- **Before you get started** : Do not copy and paste the commands in this procedure into your terminal window, type them instead. Some commands include an "n-dash" and in the cut and paste process, these commands can be applied as an "m-dash" and that may cause the command to fail.

Procedure

Step 1 Log on to Security Cloud Control .

Step 2 From the left pane, **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors** .

Step 3 Click the + icon and then click **Secure Event Connector** .

Step 4 Using the link provided, copy the SEC Bootstrap Data in step 2 of the "Deploy an On-Premises Secure Event Connector" window.

Step 5 Once installed, configure basic networking such as specifying the IP address for the Security Cloud Control Connector, the subnet mask, and gateway.

Step 6 Configure a DNS (Domain Name Server) server.

Step 7 Configure a NTP (Network Time Protocol) server.

Step 8 Install an SSH server for easy interaction with Security Cloud Control Connector's CLI.

Step 9 Install the **AWS CLI package** (https://docs.aws.amazon.com/cli/latest/userguide/awscli-install-linux.html)

Note
Do not use the `--user` flag.

Step 10 Install the **Docker CE packages** (https://docs.docker.com/install/linux/docker-ce/centos/#install-docker-ce)

Note
Use the "Install using the repository" method.

Step 11 Start the Docker service and enable it to start on boot:

```
                        [root@sdc-vm ~]#
                        systemctl start docker
 [root@sdc-vm ~]#
                        systemctl enable docker
Created symlink from /etc/systemd/system/multiuser.target.wants/docker.service to
/usr/lib/systemd/system/docker.service.
```

Step 12 Create two users: **Security Cloud Control** and **sdc.** The Security Cloud Control user will be the one you log-into to run administrative functions (so you don't need to use the root user directly), and the sdc user will be the user to run the Security Cloud Control Connector docker container.

```
                        [root@sdc-vm ~]#
                        useradd
                        Security Cloud Control
 [root@sdc-vm ~]#
                        useradd sdc -d /usr/local/
                        Security Cloud Control
```

Step 13 Configure the sdc user to use crontab:

```
                        [root@sdc-vm ~]#
                        touch /etc/cron.allow
[root@sdc-vm ~]#
                        echo "sdc" >> /etc/cron.allow
```

Step 14 Set a password for the Security Cloud Control user.

```
                        [root@sdc-vm ~]#
                        passwd
                        Security Cloud Control
Changing password for user
                        Security Cloud Control
                        .
New password:
                        <type password>
```

```
Retype new password:
                        <type password>
passwd: all authentication tokens updated successfully.
```

Step 15 Add the Security Cloud Control user to the "wheel" group to give it administrative (sudo) privileges.

```
                        [root@sdc-vm ~]#
                        usermod -aG wheel
                        Security Cloud Control
 [root@sdc-vm ~]#
```

Step 16 When Docker is installed, there is a user group created. Depending on the version of CentOS/Docker, this may be called either "docker" or "dockerroot". Check the /etc/group file to see which group was created, and then add the sdc user to this group.

```
 [root@sdc-vm ~]# grep docker /etc/group
docker:x:993:
[root@sdc-vm ~]#
[root@sdc-vm ~]# usermod -aG docker sdc
[root@sdc-vm ~]#
```

Step 17 If the `/etc/docker/daemon.json` file does not exist, create it, and populate with the contents below. Once created, restart the docker daemon.

Note
Make sure that the group name entered in the "group" key matches the group you found in the /etc/group file .

```
                         [root@sdc-vm ~]#
                        cat /etc/docker/daemon.json
{
 "live-restore": true,
 "group": "
                        docker
                        "
}
[root@sdc-vm ~]#
                        systemctl restart docker
[root@sdc-vm ~]#
```

Step 18 If you are currently using a vSphere console session, switch over to SSH and log in as the **Security Cloud Control** user. Once logged in, change to the **sdc** user. When prompted for a password, enter the password for the **Security Cloud Control** user.

```
                        [
                        Security Cloud Control
                        @sdc-vm ~]$
                        sudo su sdc
[sudo] password for
                        Security Cloud Control
                        : <
                        type password for
                        Security Cloud Control
                        user
                        >
```

```
[sdc@sdc-vm ~]$
```

Step 19 Change directories to **/usr/local/** Security Cloud Control **.**

Step 20 Create a new file called **bootstrapdata** and paste the bootstrap data from Step 1 of the deployment wizrd into this file. **Save** the file. You can use **vi** or **nano** to create the file.

Step 21 The bootstrap data comes encoded in base64. Decode it and export it to a file called **extractedbootstrapdata**

```
                        [sdc@sdc-vm ~]$
                       base64 -d /usr/local/
                       Security Cloud Control
                       /bootstrapdata > /usr/local/
                       Security Cloud Control
                       /extractedbootstrapdata
[sdc@sdc-vm ~]$
```

Run the cat command to view the decoded data. The command and decoded data should look similar to this:

```
                       [sdc@sdc-vm ~]$
                       cat /usr/local/
                       Security Cloud Control
                       /extractedbootstrapdata
                       Security Cloud Control
                       _TOKEN="<token string>"
                       Security Cloud Control
                       _DOMAIN="www.defenseorchestrator.com"
                       Security Cloud Control
                       _TENANT="<tenant-name>"
<
                       Security Cloud Control
                       _URL>/sdc/bootstrap/
                       Security Cloud Control

_acm="https://www.defenseorchestrator.com/sdc/bootstrap/tenant-name/<tenant-name-SDC>"
ONLY_EVENTING="true"
```

Step 22 Run the following command to export the sections of the decoded bootstrap data to environment variables.

```
[sdc@sdc-vm ~]$ sed -e 's/^/export /g' extractedbootstrapdata > secenv && source secenv
[sdc@sdc-vm ~]$
```

Step 23 Download the bootstrap bundle from Security Cloud Control .

```
                        [sdc@sdc-vm ~]$ curl -H "Authorization: Bearer $
                       Security Cloud Control
                       _TOKEN" "$
                       Security Cloud Control
                       _BOOTSTRAP_URL" -o $
                       Security Cloud Control
                       _TENANT.tar.gz
100 10314 100 10314 0 0 10656 0 --:--:-- --:--:-- --:--:-- 10654
[sdc@sdc-vm ~]$
                       ls -l /usr/local/
                       Security Cloud Control
                       /*SDC
-rw-rw-r--. 1 sdc sdc 10314 Jul 23 13:48 /usr/local/
                       Security Cloud Control
                       /
```

```
                                    Security Cloud Control
                                    _<tenant_name>
```

Step 24 Extract the Security Cloud Control Connector tarball, and run the bootstrap_sec_only.sh file to install the Security Cloud Control Connector package.

```
                                     [sdc@sdc-vm ~]$
                                    tar xzvf /usr/local/
                                    Security Cloud Control
                                    /tenant-name-SDC
<snipped - extracted files>
[sdc@sdc-vm ~]$
[sdc@sdc-vm ~]$
                                    /usr/local/
                                    Security Cloud Control
                                    /bootstrap/bootstrap_sec_only.sh
[2018-07-23 13:54:02] environment properly configured
download: s3://onprem-sdc/toolkit/prod/toolkit.tar to toolkit/toolkit.tar
toolkit.sh
common.sh
es_toolkit.sh
sec.sh
healthcheck.sh
troubleshoot.sh
no crontab for sdc
-bash-4.2$ crontab -l
*/5 * * * * /usr/local/
                                    Security Cloud Control
                                    /toolkit/es_toolkit.sh upgradeEventing 2>&1 >> /usr/local/
                                    Security Cloud Control
                                    /toolkit/toolkit.log
0 2 * * * sleep 30 && /usr/local/
                                    Security Cloud Control
                                    /toolkit/es_toolkit.sh es_maintenance 2>&1 >> /usr/local/
                                    Security Cloud Control
                                    /toolkit/toolkit.log
You have new mail in /var/spool/mail/sdc
```

Continue to Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created, on page 698 .

Your Secure Event Connector (SEC) is installed on your VM image, configured to securely forward events to Cisco Security Analytics and Logging (SaaS), and ready for ongoing maintenance and updates.

Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created

This configuration ensures that events can reach the SEC when you have installed your Security Cloud Control Connector on your own CentOS 7 virtual machine.

This is the second of three steps you need to complete in order to install and configure your SEC. If you have not already, complete Install a Security Cloud Control Connector to Support an SEC Using Your VM Image , on page 693 before making these configuration changes.

After you complete one of the additional configuration changes described here, complete Install the Secure Event Connector

Before you begin

You must have installed your Security Cloud Control Connector on your own CentOS 7 virtual machine.

Follow these steps to configure additional settings for your SDC and Security Cloud Control Connector:

Procedure

Step 1 Choose one of the following configuration procedures:

- Disable the firewalld service on the CentOS 7 VM (matches the configuration of the Cisco-provided SDC VM)
- Allow the firewalld service to run and add firewall rules to allow event traffic to reach the SEC (more granular approach)

Step 2 If you chose to disable the firewalld service, log into the CLI of the SDC VM as the "Security Cloud Control" user.

Step 3 Stop the firewalld service and ensure that it will remain disabled upon subsequent reboots of the VM.

If you are prompted, enter the password for the **Security Cloud Control** user.

Example:

```
[Security Cloud Control@SDC-VM ~]$ sudo systemctl stop firewalld
Security Cloud Control@SDC-VM ~]$ sudo systemctl disable firewalld
```

Step 4 Restart the Docker service to re-insert Docker-specific entries into the local firewall.

Example:

```
[Security Cloud Control@SDC-VM ~]$ sudo systemctl restart docker
```

Step 5 If you chose to allow the firewalld service to run, log into the CLI of the SDC VM as the "Security Cloud Control" user.

Step 6 Add local firewall rules to allow incoming traffic to the SEC from the TCP, UDP, or NSEL ports you configured.

See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging for the ports used by your SEC. If prompted, enter the password for the **Security Cloud Control** user. You may need to specify different port values.

Example:

```
[Security Cloud Control@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent
--add-port=10125/tcp
Security Cloud Control@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent
--add-port=10025/udp
[Security Cloud Control@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent
--add-port=10425/udp
```

Step 7 Restart the firewalld service to make the new local firewall rules both active and persistent.

Example:

```
[Security Cloud Control@SDC-VM ~]$ sudo systemctl restart firewalld
```

You have successfully configured the firewall settings on your CentOS 7 virtual machine to allow events to reach the SEC.

What to do next

Continue to Install the Secure Event Connector.

Install the Secure Event Connector on your Security Cloud Control Connector Virtual Machine

This procedure completes the installation and configuration of your Secure Event Connector (SEC) on your virtual machine, enabling secure event logging and analytics capabilities.

This is the final step in a three-part process to deploy a Secure Event Connector. The SEC enables secure event logging and analytics for your devices managed through Security Cloud Control.

Before you begin

This is the third of three steps you need to complete in order to install and configure your Secure Event Connector (SEC). If you have not already, complete the following tasks before continuing with this procedure:

- Install a Security Cloud Control Connector to Support an SEC Using Your VM Image , on page 693.
- Configure additional settings for SDCs and Security Cloud Control Connectors installed on a VM you created, on page 698.

Follow these steps to install the Secure Event Connector on your Security Cloud Control Connector Virtual Machine:

Procedure

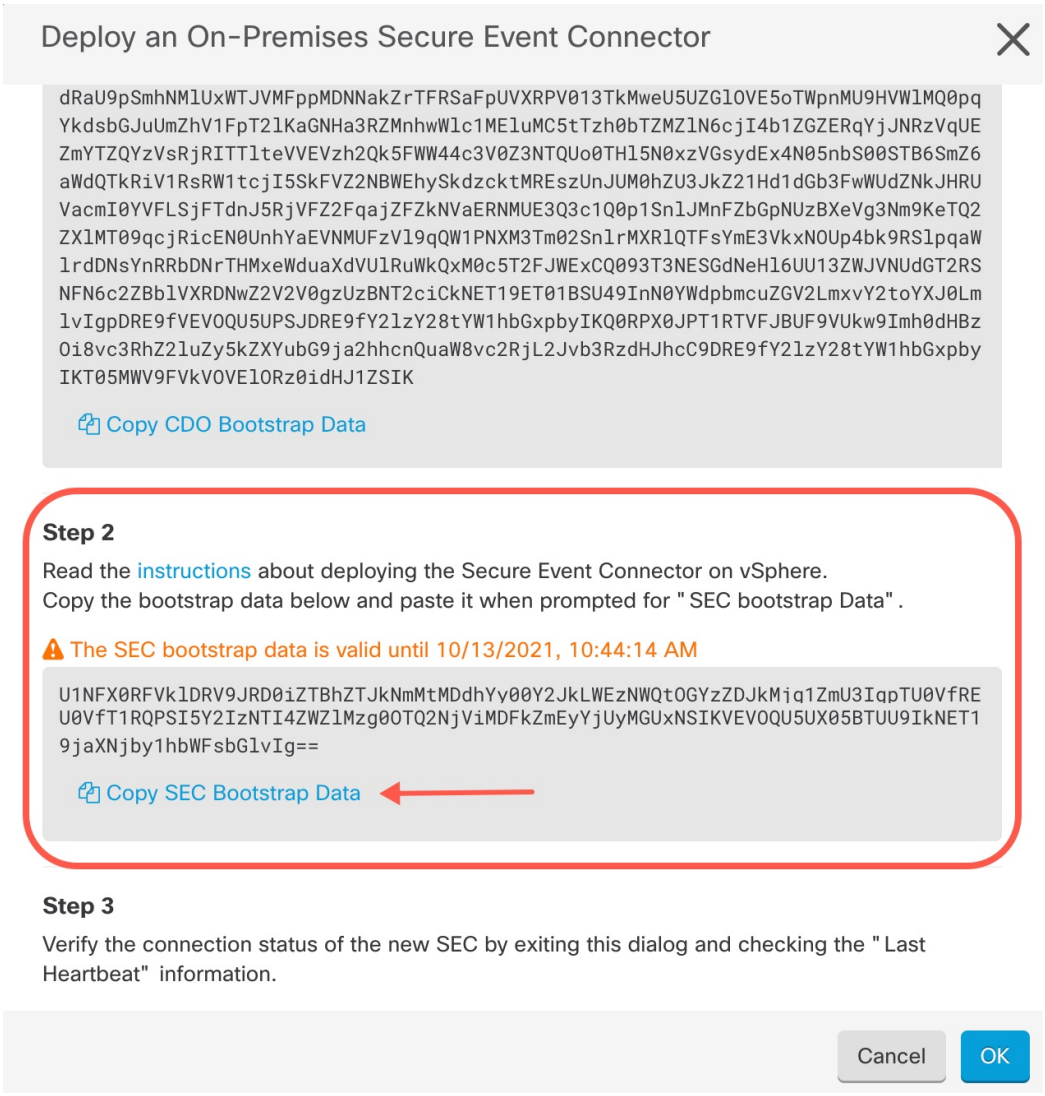
Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Select the Security Cloud Control Connector that you installed using the procedure in the prerequisites above. In the Secure Connectors table, it will be displayed as Secure Event Connector.

Step 4 Click **Deploy an On-Premises Secure Event Connector** in the **Actions** pane on the right.

Step 5 In **step 2** of the wizard, click the link to **Copy SEC Bootstrap Data**.



Step 6 Connect to the Secure Connector using SSH and log in as the Security Cloud Control user.

Step 7 Once logged in, switch to the **sdc** user. When prompted for a password, enter the password for the "Security Cloud Control" user. Here is an example of those commands:

Example:

```
[cdo@sdc-vm ~]$ sudo su sdc
[sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

Step 8 At the prompt, run the SEC.sh setup script:

Example:

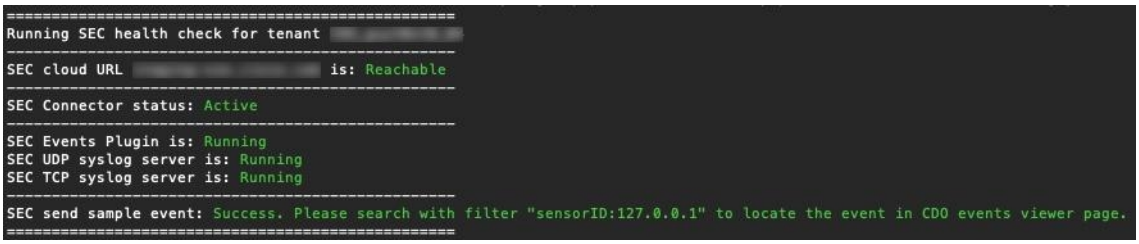
```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 9 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

Example:

```
Please copy the bootstrap data from Setup Secure Event Connector page of CDO:
 KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the SEC.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "SEC-health-check."



If you receive the success message, click **Done** in the **Deploy an ON-Premise Secure Event Connector** dialog box.You have finished installing an SEC on a your VM image.

Return to this procedure to continue your implementation of SAL SaaS: Implement secure logging analytics (SaaS) for ASA devices, on page 710.

The Secure Event Connector is successfully installed and configured on your virtual machine. The SEC performs health checks and sends a sample event to verify proper operation.

Install a secure event connector on an AWS VPC using a terraform module

This task enables you to deploy a secure event connector on your AWS VPC infrastructure using Terraform automation, allowing for secure log collection and transmission to Security Cloud Control.

Use this procedure when you need to establish a secure event connector in an AWS VPC environment for centralized logging and analytics. The Terraform module automates the deployment process and ensures proper security configurations.

Before you begin

- To perform this task, you must enable SAL on your Security Cloud Control tenant. This section presumes that you have a SAL license. If you do not have one, purchase the Cisco Security and Analytics Logging, Logging and Troubleshooting license.
- Ensure you have a new SEC installed. To create a new SEC, see Install a secure event connector on an SDC virtual machine, on page 684.
- When installing the SEC, make sure you take a note of the Security Cloud Control bootstrap data and SEC bootstrap data.

Follow these steps to install a secure event connector on an AWS VPC using a Terraform module:

Procedure

Step 1 Go to Secure Event Connector Terraform Module on the Terraform Registry and follow the instructions to add the SEC Terraform module to your Terraform code and apply.

Step 2 Ensure that you print the **instance_id** and **sec_fqdn** outputs, because you will need them later in the procedure.

Note
To troubleshoot your SEC, you must connect to your SEC instance using the AWS Systems Manager Session Manager (SSM). See the AWS Systems Manager Session Manager documentation to know more about connecting to an instance using SSM.

Ports to connect to the SDC instance using SSH are not exposed for secuirty reasons.

Step 3 To enable sending of logs from your ASA to the SEC, obtain the certificate chain of the SEC you created and remove the leaf certificate by running this command with the output from Step 3:

```
rm -f /tmp/cert_chain.pem && openssl s_client -showcerts -verify 5 -connect <FQDN>:10125 <
 /dev/null | awk '/BEGIN CERTIFICATE/,/END CERTIFICATE/{ if(/BEGIN CERTIFICATE/){a++};
out="/tmp/cert_chain.pem"; if(a > 1) print >>out}'
```

Step 4 Copy the contents of **/tmp/cert_chain.pem** to your clipboard.

Step 5 Take a note of the IP address of the SEC using this command:

```
nslookup <FQDN>
```

Step 6 Log in to Security Cloud Control and start adding a new trustpoint object.

See Adding a Trusted CA Certificate Object for more information. Ensure you uncheck the **Enable CA flag in basic constraints extension** checkbox in **Other Options** before clicking **Add**.

Step 7 Click **Add**, copy the CLI commands generated by Security Cloud Control in the **Install Certificate** page, and click **Cancel**.

Step 8 Below **enrollment terminal**, add **no CA-check** in a text clipboard.

Step 9 SSH into your ASA device or use the ASA CLI option in Security Cloud Control and execute these commands:

```
DataCenterFW-1> en
Password: *****************
DataCenterFW-1# conf t
DataCenterFW-1(config)# <paste your modified ASA CLIs here and press Enter>
DataCenterFW-1(config)# wr mem
Building configuration...
Cryptochecksum: 6634f35f 4c5137f1 ab0c5cdc 9784bdb6
```

What to do next: You can check if your SEC is receiving packets using AWS SSM:

You should now see logs similar to this:

```
time="2023-05-10T17:13:46.135018214Z" level=info msg="[ip-10-100-5-19.ec2.internal][util.go:67
 plugin.createTickers:func1] Events - Processed - 6/s, Dropped - 0/s, Queue size - 0"
```

The secure event connector is successfully deployed on your AWS VPC and configured to receive logs from your ASA device. The SEC will begin processing and forwarding security events to Security Cloud Control for analysis and monitoring.

Secure event connector removal

Secure Event Connector removal is a process that

- deletes the Secure Event Connector from the Secure Device Connector
- prevents the use of Secure Logging Analytics (SaaS), and
- is not reversible once completed.

Removal process

Warning This procedure deletes the Secure Event Connector from the Secure Device Connector. Doing so will prevent you from using Secure Logging Analytics (SaaS). It is not reversible. If you have any questions or concerns, contact Security Cloud Control support before taking this action.

Removing the Secure Event Connector from your Secure Device Connector is a two-step process:

1. Remove SEC from Security Cloud Control.
2. Remove SEC files from the SDC.

What to do next: Continue to Remove SEC from Security Cloud Control

Remove an SEC from Security Cloud Control

This task removes an SEC (Secure Event Connector) from your Security Cloud Control management system when it is no longer needed or when troubleshooting connectivity issues.

Use this procedure when you need to disconnect and remove a Secure Event Connector from your Security Cloud Control environment. This is typically done during device decommissioning or when reconfiguring your security infrastructure.

Before you begin

See Secure event connector removal, on page 704.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 From the left pane, choose **Tools & Services** > **Secure ConnectorsAdministration** > **Secure Connectors**.

Step 3 Select the row with the device type, **Secure Event Connector**.

Warning
Be careful NOT to select your Secure Device Connector.

Step 4 In the **Actions** pane, click **Remove**.

Step 5 Click **OK** to confirm.

Continue to Remove a secure event connector from the secure device connector VM, on page 705.

The Secure Event Connector is successfully removed from Security Cloud Control and no longer appears in the connector list.

Remove a secure event connector from the secure device connector VM

Remove the Secure Event Connector from your Secure Device Connector virtual machine to complete the SEC removal process.

This is the second part of a two part procedure to remove the Secure Event Connector from your SDC. See Secure event connector removal, on page 704 before you begin.

Procedure

Step 1 Open your virtual machine hypervisor and start a console session for your SDC.

Step 2 Switch to the SDC user using the command **sudo su SDC**.

Example:

```
[cdo@sdc]$ sudo su sdc
```

Step 3 Remove the SEC from the SDC virtual machine using one of the following commands:

- If you want to use the tenant selector (or if there's only one tenant on the VM):

  ```
  [sdc@tenant toolkit]$ sdc eventing delete
  ```

- If you want to specify the tenant directly in the command arguments:

  ```
  [sdc@tenant toolkit]$ sdc eventing delete CDO_{tenant-name}
  ```

Step 4 Confirm your intention to remove the SEC files.

The Secure Event Connector is successfully removed from the Secure Device Connector virtual machine.

Finding your device's TCP, UDP, and NSEL port used for secure logging analytics (SaaS)

This task helps you identify the correct TCP, UDP, and NSEL ports that your Secure Event Connector (SEC) uses to receive events from your ASA or FDM-managed devices for Secure Logging Analytics (SaaS).

Secure Logging Analytics (SaaS) allows you to send events from your ASA or FDM-managed devices to certain UDP, TCP, or NSEL ports on the Secure Event Connector (SEC). The SEC then forwards those events to the Cisco cloud.

If these ports aren't already in use, the SEC makes them available to receive events and the Secure Logging Analytics (SaaS) documentation recommends using them when you configure the feature.

- TCP: 10125
- UDP: 10025
- NSEL: 10425

If those ports are already in use, before you configure Secure Logging Analytics (SaaS), look at your SEC device details to determine what ports it is actually using to receive events.

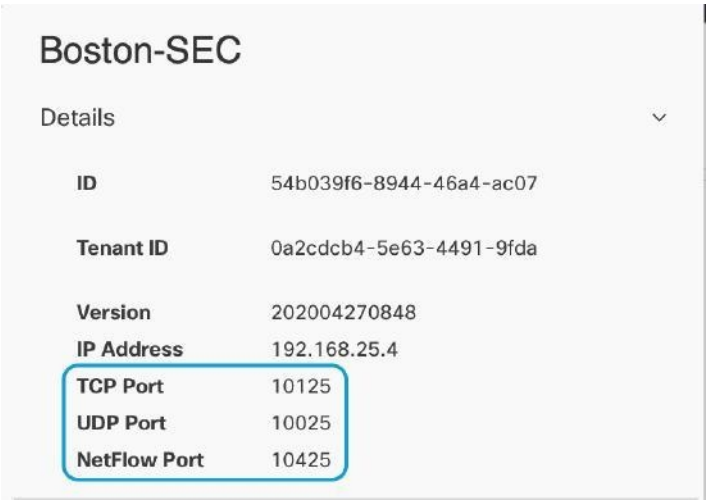
Follow these steps to find the port numbers the SEC uses:

Procedure

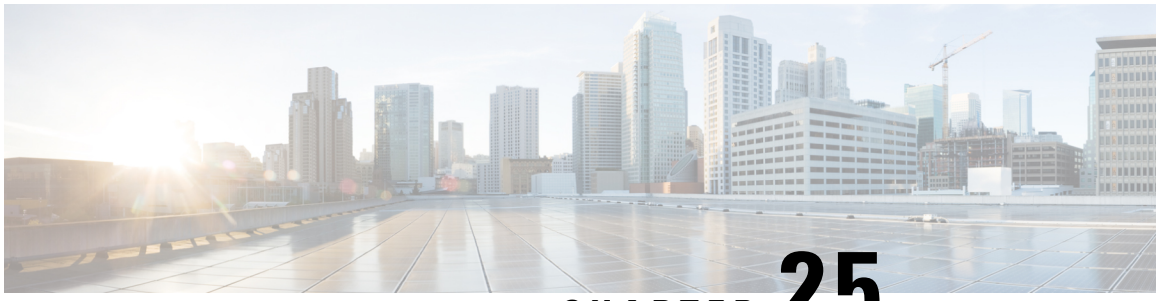
Step 1 From the left pane, click **Tools & Services** > **Secure ConnectorsAdministration** > **Secure ConnectorsAdministration** > **Integrations** > **Firewall Management Center** and then click the **Secure Connectors** tab.

Step 2 In the **Secure Connectors** page, select the SEC you want to send events to.

Step 3 In the **Details** pane, you will see the TCP, UDP, and NetFlow (NSEL) port you should send events to.



The Details pane displays the specific TCP, UDP, and NetFlow (NSEL) ports that your SEC is configured to use for receiving events from your devices.



CHAPTER 25

Monitor Secure Firewall ASA Events

This chapter covers information on how to share events from your Secure Firewall ASA and view them in Security Cloud Control.

- About Security Analytics and Logging (SAL SaaS) for ASA devices, on page 707
- Implement secure logging analytics (SaaS) for ASA devices, on page 710
- Send ASA syslog events to the Cisco Cloud using a Security Cloud Control macro, on page 711
- Requirement: send ASA syslog events to the Cisco cloud using the command line interface, on page 714
- NetFlow secure event logging (NSEL) for ASA devices, on page 721
- Parsed ASA syslog events, on page 736

About Security Analytics and Logging (SAL SaaS) for ASA devices

Security Analytics and Logging (SaaS) allows you to capture all syslog events and Netflow Secure Event Logging (NSEL) from your ASA and view them in one place in Security Cloud Control .

The events are stored in the Cisco cloud and viewable from the Event Logging page in Security Cloud Control where you can filter and review them to gain a clear understanding of what security rules are triggering in your network. The **Logging and Troubleshooting** package gives you these capabilities.

Licensing

To configure this solution you need the following accounts and licenses:

- Security Cloud Control : You must have a Security Cloud Control tenant.
- **Secure Device Connector** : There is no separate license for a Secure Device Connector.
- **Secure Event Connector** : There is no separate license for a Secure Event Connector.
- **Secure Logging Analytics (SaaS)** : See Security Analytics and Logging licenses, on page 673 .
- **Adaptive Security Appliance (ASA)** : Base license or higher.

Next step

Go to Implementing Secure Logging Analytics (SaaS) for ASA Devices

A Security Analytics and Logging is a service that captures syslog events and Netflow Secure Event Logging, stores events in the Cisco cloud, and provides filtering and review capabilities.

- captures syslog events and Netflow Secure Event Logging
- stores events in the Cisco cloud, and, and
- provides filtering and review capabilities.

How ASA events are displayed in Security Cloud Control

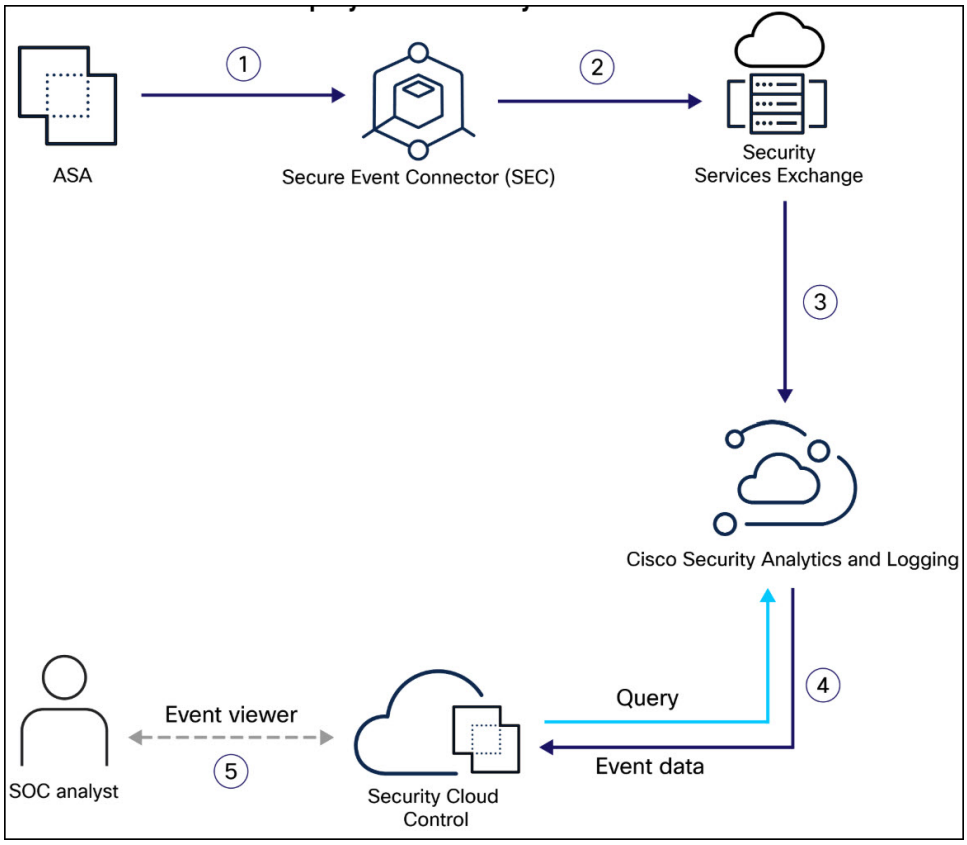
Summary

The key components involved in displaying ASA events in Security Cloud Control are:

- ASA devices: Generate and forward syslog and NSEL events when logging is enabled and network traffic matches access control rule criteria
- Secure Event Connectors: Receive events from ASA devices and forward them to Security Services Exchange
- Security Services Exchange: Aggregates event data from all devices, converts it to JSON format, and sends it for storage
- Security Analytics and Logging: Processes and enriches event data for use by Security Cloud Control
- Security Cloud Control: Stores event data and provides SOC analysts with relevant information

Workflow

Figure 20: How ASA events are displayed in security cloud control



These stages describe how ASA events are processed and displayed in Security Cloud Control:

1. You configure the ASA to forward syslog and NSEL events to any one of your Secure Event Connectors as if they were syslog servers and enable logging on the device.

   Syslog events and NSEL events are generated when logging is enabled on the ASA, and network traffic matches access control rule criteria. The ASA device forwards the syslog and NSEL events to the configured Secure Event Connector.

2. The Secure Event Connector forwards the events to Security Services Exchange.
3. Security Services Exchange aggregates the event data from all the ASA devices, converts it to JSON format, and sends it to Security Analytics and Logging for storage.
4. Security Analytics and Logging process the event data using various services to classify and enrich it for use by the Security Cloud Control.
5. Security Cloud Control stores the event data in the cloud data store. Security Cloud Control queries the stored data to provide SOC analysts with the relevant information.

Implement secure logging analytics (SaaS) for ASA devices

Implement Secure Logging Analytics (SaaS) to send ASA device events to the Cisco cloud for security analysis and monitoring.

Use this workflow to set up secure logging analytics for ASA devices, enabling cloud-based security monitoring and analysis capabilities.

Before you begin

- Review Secure Logging Analytics (SaaS) for ASA devices to learn about:
  - How events are sent to the Cisco cloud
  - Applications in the solution
  - Licenses you need
  - Data plan you need
- You have contacted your managed service provider or Security Cloud Control Sales representative to create a Security Cloud Control tenant.
- You have installed one or more SECs for your tenant and you can send events from any ASA to any SEC onboarded to your tenant.

Follow these steps to implement Cisco Security Analytics and Logging (SaaS) and send events through the Secure Event Connector to the Cisco Cloud:

Procedure

Step 1 Be sure to review "Before you Begin" above to make sure your environment is properly configured.

Step 2 Onboard ASA device to Security Cloud Control Firewall Management, on page 215 using username and password.

Step 3 Send ASA Syslog Events to the Cisco Cloud.

Step 4 Configuring NSEL for ASA Devices Using a Security Cloud Control Macro.

Step 5 Confirm events are visible in Security Cloud Control.

From the navigation bar, select **Events & Logs** > **Events** > **Event Logging**. Click the **Live** tab to view live events.

You have successfully implemented Secure Logging Analytics (SaaS) for your ASA devices. Events are now being sent to the Cisco cloud for analysis and monitoring. If you have the appropriate licenses, you can also access Secure Cloud Analytics for advanced security monitoring and alerting capabilities.

What to do next

For troubleshooting and monitoring:

- Troubleshooting Secure Event Connector Onboarding Failures

- Event Logging Troubleshooting Log Files
- Use Health Check to Learn the State of your Secure Event Connector
- Troubleshooting Using Security and Analytics Logging Events

Send ASA syslog events to the Cisco Cloud using a Security Cloud Control macro

A Security Cloud Control macro is a configuration tool that

- allows you to assemble a list of CLI commands and turn elements of the command syntax into parameters
- can be saved and used more than once, and
- can be run on multiple devices at the same time to configure all your ASAs to send events to the Cisco cloud.

Macro benefits

Using proven macros promotes configuration consistencies between devices and prevents syntax errors that can occur when using the command line interface.

You can configure all your ASAs to send events to the Cisco cloud by creating a Security Cloud Control macro that uses all the commands described in Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface and running that macro on all your ASA in the same batch.

Before you read further, review macros in Security Cloud Control configuration guide so that you understand the mechanics of using macros. This article will only describe assembling the final macro.

Create an ASA security analytics and logging (SaaS) macro

This task helps you create a reusable macro that automates the configuration of ASA logging to send syslog events to a Secure Event Connector (SEC) in the Cisco cloud. The macro allows you to define parameters that can be customized each time you run it, making it easy to deploy consistent logging configurations across multiple ASA devices.

There are two types of formatting you'll see in the following procedure, ASA CLI commands and macro formatting. The ASA CLI commands are written to follow ASA syntax conventions. See Use command line interface for more information about using the CLI in Security Cloud Control.

Before you begin, open Send ASA Syslog Events to the Cisco Cloud in a separate window and read it in parallel with this procedure so you can read the command descriptions as you create your macros.

Before you begin

Note If a logging config is already in place on the ASA, running the macro from Security Cloud Control will *not* first clear out all of the existing logging config. Rather, the settings defined in the Security Cloud Control macro will merge into whatever might already be in place.

Procedure

Step 1 Open a plain text editor and create a list of commands you are going to turn into a macro, based on the instructions and options below. Security Cloud Control will execute the commands in the order they are written in the macro. Some command will have values that you turn into {{parameters}} that you will fill in when it comes time to run the macro.

Step 2 **Configure the** ASA **to send messages to an SEC as if it were a syslog server.**

Use the **logging host** command to specify the SEC as the syslog server you send messages to. You can send events to any one of the SECs you have onboarded to your tenant.

The **logging host** command specifies a TCP or UDP port to send events to. See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging to determine what ports you should use.

logging host*interface_nameSEC_IP_address* { **TCP/port** | **UDP/port** }

Turn this command into one of two different macros depending on what protocol you use to send syslog events to the SEC:

logging host {{interface_name}} {{SEC_ip_address}} TCP/{{port_number}}

logging host {{interface_name}} {{SEC_ip_address}} UDP/{{port)_number}}

(Optional) If you use TCP, you can add this command to your list of commands in your macro. It does not need any parameters.

logging permit-hostdown

Step 3 **Specify which syslog messages should be sent to the syslog server.**

Use the **logging trap** command to specify which syslog messages should be sent to the syslog server:

logging trap { *severity_level* | *message_list* }

If you want to define the events sent to the SEC by severity level, turn the command into this macro:

logging trap {{severity_level}}

If you only want to send events to the SEC that are part of a message list, turn the command into this macro:

logging trap {{message_list_name}}

If you chose the **logging trap message_list** command in the previous step, you need to define the syslogs in your message list. Open Create a Custom Event List so you can read the command descriptions as you create the macro. Start with this command:

logging list*name* { **level***level* [**class***message_class*] | **message***start_id* [*-end_id*] }

And break it down into these variations:

logging list {{message_list_name}} level {{security_level}}

logging list {{message_list_name}} level {{security_level}} class {{message_class}}

logging list {{message_list_name}} message {{syslog_range_or_number}}

In the last variation, the message parameter {{syslog_range_or_number}} could be entered as a single syslog ID, 106023, or a range, 302013-302018. Use one or more of the command variations in as many lines as you

like to create your message list. Keep in mind that, in a single macro, all parameters with the same name will use the same value you enter. Security Cloud Control will not run a macro with empty parameters.

Important
The **logging list** command has to come before the **logging trap** command in your macro. You define the list first and then the **logging trap** command can use it. See the sample macro below.

Step 4 **(Optional) Add the syslog timestamp.** Add this command if you want to add the date and time to the message that the syslog message originated on the ASA. The timestamp value is displayed in the **SyslogTimestamp** field. Add this command to your list of commands, it will not need any parameters:

logging timestamp

Note
Beginning with version 9.10(1), ASA provides the option to enable timestamp as per RFC 5424 in eventing syslogs. When this option is enabled, all timestamp of syslog messages would be displaying the time as per RFC 5424 format. This is a sample output with RFC 5424 format:

```
<166>2018-06-27T12:17:46Z asa : %ASA-6-110002: Failed to locate egress interface for protocol
 from src interface :src IP/src port to dest IP/dest port
```

Step 5 **(Optional) Include a device ID in non-EMBLEM format syslog messages.** Open Include the Device ID in Non-EMBLEM Format Syslog Messages so you can read the command descriptions as you create the macro. This is the CLI command you will base your macro on:

logging device-ID {**cluster-ID** | **context-name** | **hostname** | **ipaddress** *interface_name* [**system**] | **string***text*}

And break it down into these variations:

logging device-ID cluster-ID

logging device-ID context-name

logging device-ID hostname

logging device-ID ipaddress {{interface_name}} **system**

logging device-ID string {{text_16_char_or_less}}

Step 6 **Enable logging**. Add this command to your macro as it is. It does not have any parameters:

logging enable

Step 7 **Do not add write memory** to the last line of the macro. Add the **show running-config logging** command instead to review the results of the logging commands you entered before committing them to the ASA's startup config.

show running-config logging

Step 8 After you are confident your configuration changes were made, you can create a separate macro for the **write memory** command or use Security Cloud Control's Bulk Command Line Interface tool to issue the command to all the devices you configured using your macro.

write memory

Step 9 **(Optional) Enable logging on access control rule "permit" events.** This step in the described in the Send ASA Syslog Events to the Cisco Cloud procedure but it is not included in this macro. It is performed in the Security Cloud Control GUI instead.

Step 10 Save the macro.

You have successfully created an ASA Security Analytics and Logging macro that can be run to configure multiple ASA devices with consistent logging settings. The macro includes commands for specifying the SEC as a syslog server, defining which messages to send, and enabling logging functionality.

Here is a sample of a list of commands combined into a single macro:

```
logging host {{interface_name}} {{SEC_ip_address}} {{tcp_or_udp}}/{{port_number}}
logging permit-hostdown
logging list {{message_list_name}} level {{security_level}}
logging list {{message_list_name}} message {{syslog_range_or_number_1}}
logging list {{message_list_name}} message {{syslog_range_or_number_2}}
logging trap {{message_list_name}}
logging device-id cluster-id
logging enable
show running-config logging
```

Note There are several logging list commands to add different specific syslog IDs or ranges. The {{syslog_range_or_number_X}} parameter requires a number or some other differentiator, otherwise their values will all be the same when the macro is filled in. Also keep in mind that Security Cloud Control will not run a macro if not all the parameters are given a value, so only include the commands in the macro you want to execute. We do want all the syslog IDs contained in the same list so event_list_name stays the same for in each line.

Run the Macro

After you have created and saved the ASA Security Analytics and Logging Macro, run the macro to send ASA syslog events to the Cisco cloud.

Requirement: send ASA syslog events to the Cisco cloud using the command line interface

Limitations on supported ASA commands

This procedure explains how to forward ASA syslog events to a Secure Event Connector (SEC) and then enable logging. These procedures explain only what is needed to complete that workflow. For a broader discussion of all the ways you can configure logging on the ASA, see the Monitoring chapter of either ASDM1: Cisco ASA Series General Operations ASDM Configuration Guide or CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide.

- Security Cloud Control does not yet support EMBLEM format for syslogs.
- Security Cloud Control does not yet support Secure Syslogs.

Security Cloud Control Command Line Interface for ASA

Access the command line interface to configure ASA devices directly through Security Cloud Control.

For all the tasks in this procedure, you will be working on the Security Cloud Control's command line interface for ASA.

Procedure

Step 1 From the left navigation bar, click **InventorySecurity Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab and select the ASA for which you want to enable logging.

Step 4 In the Device Actions pane on the right, click **>_ Command Line Interface**.

Step 5 Click the **Command Line Interface** tab.

After entering every command, you will click **Send**. Because Security Cloud Control's CLI Interface is a direct connection to the ASA, the command is written to the device's running configuration immediately. For changes to be written to the ASA's startup configuration, you need to issue the `write memory` command in addition.

You are now ready to enter commands at the command line interface prompt.

Forward ASA syslog events to the secure event connector

This task enables ASA syslog event forwarding to Secure Event Connectors for centralized logging and monitoring.

To forward ASA syslog events to one of the Secure Event Connectors (SECs) you have onboarded and then enable logging, you need complete these tasks in the procedure that follows.

Procedure

Step 1 Configure the ASA to send messages to the SEC as if it were a syslog server.

Step 2 Decide what severity level of all logs, or what list of syslog events, you want to send to the SEC.

Step 3 Enable logging.

Step 4 Save the changes to the ASA's startup config.

ASA syslog events are now forwarded to the configured Secure Event Connector with logging enabled and changes saved to startup configuration.

Send ASA syslog events to the Cisco cloud using CLI

This task configures the ASA to forward syslog events to the Cisco cloud for security analytics and logging purposes through the Secure Event Connector.

When sending syslog events from the ASA to the Cisco cloud, you forward them to the SEC as if it were an external syslog server, and it forwards the messages to the Cisco cloud.

Procedure

Step 1 Configure the ASA to send messages to the SEC as if it were a syslog server

To send syslog messages to the SEC, perform the following steps:

a. Configure the ASA to send messages, using TCP or UDP, to the SEC as if it were a syslog server. The SEC can use an IPv4 or IPv6 addresss. You will be sending events to either a TCP or UDP port. See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging to determine what ports you should use.

Here is an example of the **logging host** command syntax:

logging host *interface_name SEC_IP_address* [[**TCP/port**] | [**UDP/port**]]

Examples:

```
 > logging host mgmt 192.168.1.5 tcp/10125
> logging host mgmt 192.168.1.5 udp/10025
> logging host mgmt 2002::1:1 tcp/10125
> logging host mgmt 2002::1:1 udp/10025
```

- The **interface_name** argument specifies the ASA interface from which messages are sent to the syslog server. It is a "best practice" to send the syslog messages to the SDC over the same ASA interface already in use for communication with the SDC.
- The **SEC_IP_address** argument should contain the IP address of the VM on which the SEC is installed.
- The **TCP/port** or **UDP/port** keyword-argument pair specifies that syslog messages should be sent using either TCP protocol and relevant port, or the UDP protocol and relevant port. You can configure the ASA to send data to a syslog server using either UDP or TCP, but not both. The default protocol is UDP if you do not specify a protocol.

  If you specify TCP, the ASA will discover syslog server failures and as a security protection, new connections through the ASA are blocked. To allow new connections regardless of connectivity to a TCP syslog server, see step b. If you specify UDP, the ASA continues to allow new connections whether or not the syslog server is operational. Valid port values

  Note
  If you want to send ASA messages to two separate syslog servers, you can run a second logging host command with the appropriate interface, IP address, protocol and port of the other syslog server.

b. (Optional) If you send events to the SEC over TCP, and if either the SEC is down or the log queue on the ASA is full, then new connections are blocked. New connections are allowed again after the syslog server is back up and the log queue is no longer full. To allow new connections regardless of connectivity to a TCP syslog server, disable the feature to block new connections when a TCP-connected syslog server is down using this command:

logging permit-hostdown

Example:

```
 > logging permit-hostdown
```

Step 2 Specify which syslog messages should be sent to the syslog server with the following command:

logging trap { severity_level | message_list }

Examples:

```
> logging trap 3
> logging trap asa_syslogs_to_cloud
```

You can specify the severity level number (1 through 7) or name. For example, if you set the severity level to 3, then the ASA sends syslog messages for severity levels 3, 2, and 1.

The message_list argument is replaced with the name of a custom event list, if you have created one. When specifying a custom event list, you only send the syslog messages that are in that list to the Secure Event Connector. In the example above, asa_syslogs_to_cloud is the name of the event list.

Using a message_list could save you money by tightly defining which syslog messages are sent to the Cisco cloud.

See Create a Custom Event List to create a message_list. See Security Analytics and Logging licenses, on page 673 for more information about data ingest and storage costs.

Step 3 (Optional) Add the syslog timestamp

Add the date and time that the syslog message originated on the ASA to the message using the logging timestamp command. The timestamp value is displayed in the **SyslogTimestamp** field.

Example:

```
> logging timestamp
```

Note
Beginning with version 9.10(1), ASA provides the option to enable timestamp as per RFC 5424 in eventing syslogs. When this option is enabled, all timestamp of syslog messages would be displaying the time as per RFC 5424 format. Following is a sample output with RFC 5424 format:

```
<166>2018-06-27T12:17:46Z asa : %ASA-6-110002: Failed to locate egress interface for protocol
 from src interface :src IP/src port to dest IP/dest port.
```

Step 4 (Optional) Include a device ID in non-EMBLEM format syslog messages

A device ID is an identifier you can insert in a syslog message that will help you easily distinguish all syslog messages sent from a particular ASA. See Include the Device ID in Non-EMBLEM Format Syslog Messages for instructions.

Step 5 (Optional) Enable logging on access control rule "permit" events

When an access control rule denies access to a resource, the event is automatically logged. If you also want to log events generated when an access control rule allows access to a resource, you need to turn on logging for the access control rule and configure a severity type.

See Log Rule Activity for instructions on how to turn on logging for an individual network access control rule.

Note
Enabling logging on access control rule "permit" events will use-up more of your purchased data plan as it is based on your daily ingest rate of events.

Step 6 Enable logging

At the command prompt, type logging enable. On the ASA, logging is enabled for the entire device, not for individual rules.

Example:

```
> logging enable
```

Note
At this time, Security Cloud Control does not support enabling secure logging.

Step 7 Save your Changes to the Startup Config

At the command prompt, type write memory. On the ASA, logging is enabled for the entire device, not for individual rules.

Example:

```
> write memory
```

The ASA is now configured to send syslog events to the Cisco cloud through the Secure Event Connector. Logging is enabled and messages will be forwarded according to your specified configuration.

Create a custom event list

Create a custom event list to filter and send specific ASA syslog events to logging destinations such as syslog servers or Secure Event Connectors in the Cisco Cloud.

Create a custom event list when you are sending ASA syslog events to the Cisco Cloud using one of these methods:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Send ASA Syslog Events to the Cisco Cloud using a Security Cloud Control Macro

You can create an event list, also referred to as a message_list, based on these three criteria:

- Event Class
- Severity
- Message ID

Before you begin

Follow these steps to create a custom event list to send to a specific logging destination:

Procedure

Step 1 From the left navigation bar, click **InventorySecurity Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate tab and select the ASA whose syslog messages you want to include in a custom event list.

Step 4 In the **Device Actions** pane, click **>_ Command Line Interface.**

Step 5 Use this command syntax to issue the **logging list** command to the ASA:

logging list *name* { **level** *level* [**class** *message_class*] | **message** *start_id* [*-end_id*] }

The *name* argument specifies the name of the list. The **level** *level* keyword and argument pair specify the severity level. The **class** *message_class* keyword-argument pair specify a particular message class. The **message** *start_id* [*-end_id*] keyword-argument pair specify an individual syslog message number or a range of numbers.

Note
Do not use the names of severity levels as the name of a syslog message list. Prohibited names include emergencies, alert, critical, error, warning, notification, informational, and debugging. Similarly, do not use the first three characters of these words at the beginning of an event list name. For example, do not use an event list name that starts with the characters "err."

- **Add syslog messages to the event list based on severity**. For example, if you set the severity level to 3, then the ASA sends syslog messages for severity levels 3, 2, and 1.

  Example:

  ```
  > logging list asa_syslogs_to_cloud level 3
  ```

- **Add syslog messages based on other criteria to the event list**:

  Enter the same command as in the previous step, specifying the name of the existing message list and the additional criterion. Enter a new command for each criterion that you want to add to the list. For example, you can specify criteria for syslog messages to be included in the list as follows:

  - Syslog message IDs that fall into the range of 302013-302018.
  - All syslog messages with the critical severity level or higher (emergency, alert, or critical).
  - All HA class syslog messages with the warning severity level or higher (emergency, alert, critical, error, or warning).

    Example:

    ```
    > logging list asa_syslogs_to_cloud message 302013-302018
    > logging list asa_syslogs_to_cloud level critical
    > logging list asa_syslogs_to_cloud level warning class ha
    ```

    Note
    A syslog message is logged if it satisfies any of these conditions. If a syslog message satisfies more than one of the conditions, the message is logged only once.

Step 6 **Save your Changes to the Startup Config**

At the command prompt, type **write memory**.

Example:

```
> write memory
```

The custom event list is created and saved to the ASA startup configuration. The ASA will now filter and send syslog messages to the Cisco Cloud based on your specified criteria.

Include the device ID in Non-EMBLEM format syslog messages

Configure the ASA to include a device identifier in non-EMBLEM-format syslog messages to ensure proper identification and tracking in the Event Logging page's SensorID field.

You can configure the ASA to include a device ID in non-EMBLEM-format syslog messages. You can specify only one type of device ID for syslog messages. This procedure is referred to by these procedures:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Send ASA Syslog Events to the Cisco Cloud using a Security Cloud Control Macro

This device identifier will be reflected in the SensorID field of a syslog event displayed on the Event Logging page.

Procedure

Step 1 Select the ASA whose syslog messages you want to assign a device-ID to.

Step 2 In the Device Actions pane, click **>_ Command Line Interface.**

Step 3 Use this command syntax to issue the **logging device-ID** commands to the device.

logging device-ID { **cluster-ID** | **context-name** | **hostname** | **ipaddress***interface_name* [**system**] | **string***text* }

Example:

```
> logging device-id hostname
> logging device-id context-name
> logging device-id string Cambridge
```

The **context-name** keyword indicates that the name of the current context should be used as the device ID (applies to multiple context mode only). If you enable the logging device ID for the admin context in multiple context mode, messages that originate in the system execution space use a device ID of **system**, and messages that originate in the admin context use the name of the admin context as the device ID.

Note
In an ASA cluster, always use the primary unit IP address for the selected interface.

The **cluster-ID** keyword specifies the unique name in the boot configuration of an individual ASA unit in the cluster as the device ID.

The **hostname** keyword specifies that the hostname of the ASA should be used as the device ID.

The **ipaddress** *interface_name* keyword-argument pair specifies that the interface IP address specified as *interface_name* should be used as the device ID. If you use the **ipaddress** keyword, the device ID becomes the specified ASA interface IP address, regardless of the interface from which the syslog message is sent. In the cluster environment, the **system** keyword dictates that the device ID becomes the system IP address on the interface. This keyword provides a single, consistent device ID for all syslog messages that are sent from the device.

The **string** *text* keyword-argument pair specifies that the text string should be used as the device ID. The string can include as many as 16 characters.

You cannot use blank spaces or any of the following characters:

- & (ampersand)

- ' (single quote)
- " (double quote)
- < (less than)
- > (greater than)
- ? (question mark)

Step 4 **Save your Changes to the Startup Config**

At the command prompt, type **write memory**.

Example:

```
> write memory
```

The ASA is now configured to include the specified device ID in non-EMBLEM-format syslog messages, which will appear in the SensorID field on the Event Logging page.

NetFlow secure event logging (NSEL) for ASA devices

NetFlow Secure Event Logging (NSEL) is a stateful IP flow tracking method that

- provides Security Analytics and Logging with granular data that basic syslog messages from the ASA lack
- exports only those records that indicate significant events in a flow, and
- supports NetFlow Version 9 services on Cisco ASA devices.

Flow characteristics and implementation details

A flow is defined as a unidirectional sequence of packets with some common properties that pass through a network device. These collected flows are exported to an external device, the NetFlow collector. Network flows are highly granular; for example, flow records include details such as IP addresses, packet and byte counts, timestamps, Type of Service (ToS), application ports, input and output interfaces, etc.[1]

The Cisco ASA supports NetFlow Version 9 services. The ASA implementation of NSEL provides a stateful, IP flow tracking method that exports only those records that indicate significant events in a flow. In stateful flow tracking, tracked flows go through a series of state changes.

This documentation describes a straight forward approach to configuring NetFlow for your ASAs using a Security Cloud Control macro. The Cisco ASA NetFlow Implementation Guide provides an extremely detailed discussion of configuring NetFlow on the ASA and you may find it a valuable resource to accompany this content.

What to do Next

Go to Configuring NSEL for ASA Devices Using a Security Cloud Control Macro.

Related Articles

- Configuring NSEL for ASA Devices Using a Security Cloud Control Macro

- Delete NetFlow Secure Event Logging (NSEL) Configuration from an ASA
- Determine the Name of an ASA Global Policy

1. ("Cisco Systems NetFlow Services Export Version 9." Internet Engineering Task Force, Network Working Group, Request for Comments: 3954, October 2004, B. Claise, Ed. https://www.ietf.org/rfc/rfc3954.txt)

Configuring NSEL for ASA devices by using a CDO macro

ASAs report detailed connection event data using Netflow Secure Event Logging (NSEL). You can apply Secure Cloud Analytics to this connection event data, which includes bidirectional flow statistics. This procedure describes how to configure NSEL on an ASA device and send those NSEL events to a flow collector. In this case, the flow collector is a Secure Event Connector (SEC).

Summary

The key components involved in configuring NSEL for ASA devices are:

- **ASA device**: Reports detailed connection event data using NSEL
- **Secure Event Connector (SEC)**: Acts as the flow collector that receives NSEL events
- **CDO macro**: Automates the configuration process for NSEL settings
- **Flow-export destination**: Defines where NSEL events are sent
- **Class-map**: Defines which NSEL events will be sent to the SEC
- **Policy-map**: Applies the flow-export configuration to specific traffic classes

Workflow

These are the stages of configuring NSEL for ASA devices by using a Security Cloud Control macro:

1. Before beginning the configuration process, gather the required information including the IPv4 address of the SEC, the ASA interface, the UDP port number, and the global policy name.
   - IPv4 address of the SEC that will receive data from the ASA
   - Interface on the ASA that will send data to the SEC
   - UDP port number used to forward NetFlow events. See Finding your device's TCP, UDP, and NSEL port used for secure logging analytics (SaaS), on page 705.
   - Determine the name of an ASA global policy, on page 730
2. Execute the configuration workflow by following each step in sequence to properly configure NSEL using the CDO macro.
   - Open the configuring NSEL macro, on page 723.
   - Define the destination of NSEL messages and the interval at which they are sent to the SEC, on page 724.
   - Create a Class-Map that defines which NSEL events will be sent to the SEC, on page 725.
   - Define a Policy-Map for NSEL events, on page 726.

- Recommendation: disable redundant syslog messages when using NetFlow, on page 727.
- Review and send the macro, on page 728.

This procedure refers to this macro, **Configure NSEL**:

```
 flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}
flow-export template timeout-rate {{timeout_rate_in_mins}}
flow-export delay flow-create {{delay_flow_create_rate_in_secs}}
flow-export active refresh-interval {{refresh_interval_in_mins}}
class-map {{flow_export_class_name}}
     match {{add_this_traffic_to_class_map}}
policy-map {{global_policy_map_name}}
     class {{flow_export_class_name}}
          flow-export event-type {{event_type}} destination {{SEC_IPv4_address}}
service-policy {{global_policy_map_name}} global
logging flow-export-syslogs disable
show run flow-export
show run policy-map {{global_policy_map_name}}
show run class-map {{flow_export_class_name}}
```

Here is an example of the Configure NSEL macro with all the default values filled in, a generic name for the class-map, and the class map added to the global_policy, When you are done with these procedures, your macro will resemble this:

```
 flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}
flow-export template timeout-rate 60
flow-export delay flow-create 55
flow-export active refresh-interval 1
class-map flow_export_class_map
     match any
policy-map global_policy
     class flow_export_class_map
          flow-export event-type all destination {{SEC_IPv4_address}}
logging flow-export-syslogs disable
show run flow-export
show run policy-map global_policy
show run class-map flow_export_class_map
```

Open the configuring NSEL macro

This task allows you to access the Configuring NSEL macro to configure NetFlow Secure Event Logging on ASA devices.

This is the first part in a longer workflow for configuring NSEL on ASA devices using CDO macros.

Before you begin

This is first part in a longer workflow, see Configuring NSEL for ASA devices by using a CDO macro, on page 722 before getting started.

Follow these steps to open the Configuring NSEL macro:

Procedure

Step 1 On the **InventorySecurity Devices** page, click the **Devices** tab.

Step 2 Click the appropriate device type tab and select the ASA(s) on which you want to configure NetFlow Secure Event Logging (NSEL).

Step 3 In the **Device Actions** pane, click **Command Line Interface**.

Step 4 Click the Macro star  to show the list of available macros.

Step 5 From the list of macros, select **Configuring NSEL**.

Step 6 Under the Macro box, click **View Parameters**.

Continue to Define the destination of NSEL messages and the interval at which they are sent to the SEC, on page 724.

The Configuring NSEL macro parameters are displayed, allowing you to proceed with configuring NSEL settings for the selected ASA devices.

Define the destination of NSEL messages and the interval at which they are sent to the SEC

This task configures the destination SEC collector and timing intervals for NSEL message transmission from ASA devices.

NSEL messages can be sent to any one of the SECs you have onboarded to your tenant. These instructions refer to this section of the macro:

flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}

flow-export template timeout-rate {{timeout_rate_in_mins}}

flow-export delay flow-create {{delay_flow_create_rate_in_secs}}

flow-export active refresh-interval {{refresh_interval_in_mins}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA devices by using a CDO macro, on page 722 before getting started.

Procedure

Step 1 The **flow-export destination** command defines the collector to which the NetFlow packets are sent. In this case, you are sending them to an SEC. Fill in the fields for these parameters:

- **{{interface}}**-Enter the name of the interface on the ASA from which the NetFlow events are sent.
- **{{SEC_IPv4_address}}**-Enter the IPv4 address of the SEC. The SEC functions as the flow collector.
- **{{SEC_NetFlow_port}}**-Enter the UDP port number on the SEC to which NetFlow packets are sent.

Step 2 The **flow-export template timeout-rate** command specifies the interval at which template records are sent to all configured output destinations.

- **{{timeout_rate_in_mins}}**-Enter the number of minutes before templates are resent. **We recommend using a value of 60 minutes**. The SEC does not process the templates. A large number reduces traffic to the SEC.

Step 3 The **flow-export delay flow-create** command delays the sending of flow-create events by the specified number of seconds. This value matches the recommended Active Timeout value and reduces the number of flow

events exported from the ASA. At that rate, expect NSEL events to first appear in Security Cloud Control at the close of a connection or within 55 seconds of the creation of the connection, whichever happens earlier. If this command is not configured, there is no delay, and the flow-create event is exported as soon as the flow is created.

- **{{delay_flow_create_rate_in_secs}}**-Enter the number of seconds delay between sending flow-create events. **We recommend using a value of 55 seconds**.

Step 4 The **flow-export active refresh-interval** command defines the frequency that status updates for long-lived flows will be sent from ASA. Valid values are from 1-60 minutes. In the Flow Update Interval field, configuring the **flow-export active refresh-interval** to be at least 5 seconds more than the **flow-export delay flow-create** interval prevents flow-update events from appearing before flow-creation events.

- **{{refresh_interval_in_mins}}-We recommend using a value of 1 minute**. Valid values are from 1-60 minutes.

Continue to Create a Class-Map that defines which NSEL events will be sent to the SEC, on page 725

The NSEL message destination and timing parameters are configured for transmission to the specified SEC collector.

Create a Class-Map that defines which NSEL events will be sent to the SEC

Create a class-map that identifies NSEL traffic for export to the SEC and define the matching criteria for traffic classification.

The following commands in the macro group all NSEL events in a class and then export that class to the Secure Event Connector (SEC). These instructions refer to this section of the macro:

class-map {{flow_export_class_name}}

match {{add_this_traffic_to_class_map}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA devices by using a CDO macro, on page 722 before getting started.

Procedure

Step 1 The **class-map** command names the class map that identifies NSEL traffic that will be exported to the SEC.

- **{{flow-export-class-name}}**-Enter a name for your class map. The name may be up to 40 characters in length. The names "class-default" and any name that begins with "_internal" or "_default" are reserved. All types of class maps use the same name space, so you cannot re-use a name already used by another type of class map.

Step 2 Identify the traffic that is going to be associated with (matched with) your class-map. Choose one of these options for the value of **{{add_this_traffic_to_class_map}}:**

- Enter **any** in the **{{add_this_traffic_to_class_map}}** field. This monitors all traffic types for NSEL traffic. **We recommend using the value "any".**

- Enter **access-list *name-of-access-list*** in the **{{add_this_traffic_to_class_map}}** field. This associates all the traffic associated with an access-list that you have created. See Configure Flow-Export Actions Through Modular Policy Framework in the Cisco ASA NetFlow Implementation Guide for more information.

Continue to Define a Policy-Map for NSEL events, on page 726.

You have created a class-map that defines which NSEL events will be sent to the SEC and specified the traffic matching criteria.

Define a Policy-Map for NSEL events

Create a policy-map that assigns NetFlow export actions to the class and associates the class with a new policy map for managing NSEL events.

This task assigns NetFlow export actions to the class you created in the previous task, and the class to a new policy map. These instructions refer to this section of the macro:

policy-map {{global_policy_map_name}}

class {{flow_export_class_name}}

flow-export event-type {{event_type}} destination {{SEC_IPv4_address}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA devices by using a CDO macro, on page 722 before getting started.

Procedure

Step 1 The **policy-map** command creates a policy-map. In the next task, you associate this policy map with the global policy.

- **{{global_policy_map_name}}**-Enter a name for the policy map. **We recommend using the name of the firewall's existing global policy if there is one**. The default name for the global policy is **global_policy**. See Determine the Name of an ASA Global Policy. If you create a new policy map and apply it globally according to Configure Flow-Export Actions Through Modular Policy Framework in Cisco ASA NetFlow Implementation Guide, the remaining inspection policies are deactivated.

Step 2 The **class** command inherits the name of the class-map you created in Create a Class-Map that defines which NSEL events will be sent to the SEC, on page 725.

Step 3 The **flow-export event-type** {{event-type}} **destination** {{IPv4_address}} command defines which event types should be sent to flow collector, (in this case the SEC).

- **{{event-type}}**-The event_type keyword is the name of the supported event being filtered. **We recommend using the value "all"**.
- **{{SEC_IPv4_address}}**-This is the IPv4 address of the SEC. Its value is inherited from the value you entered in Define the destination of NSEL messages and the interval at which they are sent to the SEC, on page 724.

Continue to Recommendation: disable redundant syslog messages when using NetFlow, on page 727.

The policy-map is created with NetFlow export actions assigned to the specified class for managing NSEL events.

Recommendation: disable redundant syslog messages when using NetFlow

When NetFlow is enabled to export flow information, disable redundant syslog messages for improved performance. The same information is exported through NetFlow, making these syslog messages unnecessary.

Enabling NetFlow to export flow information makes certain syslog messages redundant because the same information is exported through NetFlow. Disabling these messages improves performance.

The macro includes the command **logging flow-export-syslogs disable** to disable redundant syslog messages. You do not need to modify this command.

If you do not want to disable redundant syslog messages, you can edit this macro and delete only this line from it:

logging flow-export-syslogs disable

You can later enable or disable individual syslog messages by following the procedure in the Disabling and Reenabling NetFlow-related Syslog Messages.

Note When NSEL and syslog messages are both enabled, there is no guarantee of chronological ordering between the two logging types.

Syslog Message	Description	NSEL Event ID	NSEL Extended Event ID
106100	Generated whenever an access control rule (ACL) is encountered.	1-Flow was created (if the ACL allowed the flow). 3-Flow was denied (if the ACL denied the flow).	0-If the ACL allowed the flow. 1001-Flow was denied by the ingress ACL. 1002-Flow was denied by the egress ACL.
106015	A TCP flow was denied because the first packet was not a SYN packet.	3-Flow was denied.	1004-Flow was denied because the first packet was not a TCP SYN packet.
106023	When a flow was denied by an ACL attached to an interface through the **access-group** command.	3-Flow was denied.	1001-Flow was denied by the ingress ACL. 1002-Flow was denied by the egress ACL.
302013, 302015, 302017, 302020	TCP, UDP, GRE, and ICMP connection creation.	1-Flow was created.	0-Ignore.

Syslog Message	Description	NSEL Event ID	NSEL Extended Event ID
302014, 302016, 302018, 302021	TCP, UDP, GRE, and ICMP connection teardown.	2-Flow was deleted.	0-Ignore. > 2000-Flow was torn down.
313001	An ICMP packet to the device was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.
313008	An ICMP v6 packet to the device was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.
710003	An attempt to connect to the device interface was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.

Review and send the macro

Review and send macro commands to the ASA device to complete the NSEL configuration workflow.

This task is performed after filling in the macro fields as part of configuring NSEL for ASA devices using a CDO macro.

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA devices by using a CDO macro, on page 722, before getting started.

Follow these steps to review and send the macro:

Procedure

Step 1 After filling in the fields of the macro, click **Review** to review the commands before they are sent to the ASA.

Step 2 If you are satisfied with your responses to the commands, click **Send**.

Step 3 After you send the command, you may see the message, "Some commands may have made changes to the running config" along with two links.



- Clicking **Write to Disk** saves the changes made by this command, and any other changes in the running-configuration, to the device's startup configuration.
- Clicking **Dismiss** dismisses the message.

You have finished the workflow described in Configuring NSEL for ASA devices by using a CDO macro, on page 722.

DELETE NetFlow secure event logging (NSEL) configuration from an ASA

This task removes the NetFlow Secure Event Logging (NSEL) configuration from an ASA device, which reverses the configuration that specifies the Secure Event Connector (SEC) as the NSEL flow collector.

This procedure reverses the macro described in Configuring NSEL for ASA Devices Using a Security Cloud Control Macro.

Procedure

Use the **DELETE NSEL** macro to remove the NetFlow configuration.

Example:

```
policy-map {{flow_export_policy_name}}
no class {{flow_export_class_name}}
no class-map {{flow_export_class_name}}
no flow-export destination {{interface}} {{IPv4_address}} {{NetFlow_port}}
no flow-export template timeout-rate {{timeout_rate_in_mins}}
no flow-export delay flow-create {{delay_flow_create_rate_in_secs}}
no flow-export active refresh-interval {{refresh_interval_in_mins}}
logging flow-export-syslogs enable
show run flow-export
show run policy-map {{flow_export_policy_name}}
show run class-map {{flow_export_class_name}}
```

The NetFlow Secure Event Logging (NSEL) configuration is removed from the ASA device.

Open the DELETE-NSEL macro

This task enables you to access and prepare the DELETE-NSEL macro for removing NetFlow Secure Event Logging (NSEL) configuration from ASA devices.

Use this task when you need to DELETE the NetFlow Secure Event Logging configuration from one or more ASA devices using the command line interface and macro functionality.

Procedure

Step 1 On the **InventorySecurity Devices** page, click the **Devices** tab.

Step 2 Click the appropriate device type tab and select the ASA(s) on which you want to DELETE the configuration of NetFlow Secure Event Logging (NSEL).

Step 3 In the **Device Actions** pane, click **Command Line Interface**.

Step 4 Click the Macros star  to show the list of available macros.

Step 5 In the list of macros, select **DELETE-NSEL**.

Step 6 Under the Macro box, click **View Parameters**.

The DELETE-NSEL macro is now open and ready for parameter configuration before execution.

Enter the values in the macro to complete the no commands

Remove NetFlow policy-map configurations by completing the "no" form of commands with appropriate macro values.

The ASA CLI uses the "no" form of a command to delete it. Fill in the fields in the macro to complete the "no" form of the command:

Procedure

Step 1 policy-map {{flow_export_policy_name}}

- **{{flow_export_policy_name}}**-Enter the value of the policy-map name.

Step 2 no class {{flow_export_class_name}}

- **{{flow_export_class_name}}**-Enter the value of the class-map name.

Step 3 no class-map {{flow_export_class_name}}

- **{{flow_export_class_name}}**-The value of the class-map name is inherited from the step above.

Step 4 no flow-export destination {{interface}} {{IPv4_address}} {{NetFlow_port}}

- **{{interface}}**-Enter the name of the interface on the ASA from which the NetFlow events were sent.
- **{{IPv4_address}}**-Enter the IPv4 address of the SEC. The SEC functions as the flow collector.
- **{{NetFlow_port}}**-Enter the UDP port number on the SEC to which NetFlow packets were sent.

Step 5 no flow-export template timeout-rate {{timeout_rate_in_mins}}

- **{{timeout_rate_in_mins}}**-Enter the flow-export template timeout-rate.

Step 6 no flow-export delay flow-create {{delay_flow_create_rate_in_secs}}

- **{{delay_flow_create_rate_in_secs}}**-Enter the flow-export delay flow-create rate.

Step 7 no flow-export active refresh-interval {{refresh_interval_in_mins}}

- **{{refresh_interval_in_mins}}**-Enter the flow-export active refresh-interval interval.

The NetFlow policy-map configuration is removed from the ASA device after completing all the "no" commands with the appropriate macro values.

Determine the name of an ASA global policy

This task enables you to identify the specific name assigned to an ASA's global policy configuration.

You may need to determine the name of an ASA's global policy when troubleshooting or configuring security policies on your device.

Before you begin

Follow these steps to determine the name of an ASA global policy:

Procedure

Step 1 From the **InventorySecurity Devices** page, select the device for which you want to find the name of the global policy.

Step 2 In the Device Actions pane, select **>_Command Reference**.

Step 3 In the Command Line Interface window, at the prompt, type:

show running-config service-policy

In the output of the example below, global_policy is the name of the global policy.

Example:

>**show running-config service-policy**

service-policy global_policy global

The command output displays the global policy name in the service-policy configuration line.

Troubleshooting NSEL data flows

Troubleshooting NSEL data flows is a verification process that

- verifies that NSEL events are being sent from your ASA to the Cisco Cloud
- confirms that the Cisco Cloud is receiving NSEL events, and
- uses flow-export counters and capture commands to diagnose data flow issues.

NSEL data flow verification requirements

Once you have configured Netflow Secure Event Logging (NSEL), data does not flow immediately. It could take a few minutes for the first NSEL packets to arrive assuming there is NSEL-related traffic being generated on the ASA.

This verification process involves these tasks:

- Verify that NetFlow Packets are Being Sent to the SEC
- Verify that NetFlow Packets are Being Received by the Cisco Cloud

Note This workflow shows you a straight-forward use of the "flow-export counters" command and "capture" commands to Troubleshoot NSEL Data Flows. See "Packet Captures" CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide and "Monitoring NSEL" in the Cisco ASA NetFlow Implementation Guide for a more detailed discussion of the usage of these commands.

Verify that NSEL events are being sent to the SEC

This task verifies that NSEL events are successfully being transmitted from ASA devices to the SEC for security event monitoring.

Use one of two commands to verify that NSEL packets are being sent to the SEC:

- flow-export counters
- capture

Use the "flow-export counters" Command to Check for flow-export Packets Being Sent and for NSEL errors

- Make sure you have configured your ASA to send NSEL events to the SEC. See Configuring NSEL for ASA Devices Using a Security Cloud Control Macro.
- The SEC IP address is the flow collector address for NSEL events. If you have onboarded more than one SEC to your tenant, be sure you are using the correct IP address.
- Find the UDP port number used to forward NetFlow events. See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging.
- Our recommended interface on the ASA from which to send NSEL events is the management interface; your interface may be different.

Use the command line interface in Security Cloud Control to send these commands to the ASAs that you have configured for NSEL.

Procedure

Step 1 In the navigation pane, click **InventorySecurity Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device tab and select the ASA you configured to send NSEL events to the SEC.

Step 4 In the **Device Actions** pane on the right, click **Command Line Interface**.

Step 5 Reset the flow export counters by running the **clear flow-export counters** command. This resets the clear export flow counters to zero so that you can easily tell if new events are coming in.

example:

>**clear flow-export counters**

Done!

Step 6 Run the show flow-export counters command to see the destination of the NSEL packets, how many packets were sent and any errors:

example:

>show flow-export counters

destination: management 209.165.200.225 10425

Statistics:

packets sent 25000

Errors:

block allocation errors 0

invalid interface 0

template send failure 0

no route to collector 0

source port allocation 0

In the output above, the destination line shows the interface on the ASA from which NSEL events are sent, the IP address of the SEC, port 10425 of the SEC. It also shows packets sent of 25000.

Error descriptions:

- **block allocation errors**-If you receive a block allocation error, the ASA did not allocate memory to the flow-exporter.
  - Recovery action: Call Cisco Technical Assistance Center (TAC).
- **invalid interface**-Indicates that you are trying to send NSEL events to the SEC but the interface you've defined for flow export isn't configured to do so.
  - Recovery action: Review the interface you chose when configuring NSEL. We recommend using the management interface, your interface may be different.
- **template send failure**-The template you had to define NSEL was not parsed correctly.
  - Recovery action: Contact Security Cloud Control support.
- **no route to collector**-Indicates there is no network route from the ASA to the SEC.
  - Recovery actions:
    - Make sure that the IP address you used for the SEC when you configured NSEL is correct.
    - Make sure the SEC's status is Active and it has sent a recent heartbeat. See SDC is Unreachable, on page 813.
    - Make sure the Secure Device Connector's status is Active and it has sent a recent heartbeat.
- **source port allocation**-May indicate that there is a bad port on your ASA.

Use the "capture" command to capture NSEL packets sent from the ASA to the SEC

This task captures NSEL packets to verify that your ASA is successfully sending NSEL events to the SEC.

Use the command line interface in Security Cloud Control to send these commands to the ASAs that you have configured for NSEL.

Before you begin

- Make sure you have configured your ASA to send NSEL events to the SEC. See Configuring NSEL for ASA Devices Using a Security Cloud Control Macro.

- The SEC IP address is the flow collector address for NSEL events. If you have onboarded more than one SEC to your tenant be sure you are using the correct IP address.
- Find the UDP port number used to forward NetFlow events. See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging.
- Our recommended interface on the ASA from which to send NSEL events is the management interface; your interface may be different.

Follow these steps to capture NSEL packets sent from the ASA to the SEC:

Procedure

Step 1 In the navigation pane, click **InventorySecurity Devices**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab and select the ASA you configured to send NSEL events to the SEC.

Step 4 In the **Device Actions** pane on the right, click **Command Line Interface**.

Step 5 In the command window, run this **capture** command:

>**capture***capture_name***interface***interface_name* **match UDP any host** *IP_of_SEC***eq***NetFlow_port*

Where

- *capture_name* is the name of the packet capture.
- *interface_name* is the name of the interface from which NSEL packets leave the ASA.
- *IP_of_SEC* is the IP address of the SEC VM.
- *NetFlow_port* is the port to which NSEL events are sent.

This starts the packet capture.

Step 6 Run the **show capture** command to view the captured packets:

> show capture*capture_name*

Where *capture_name* is the name of the packet capture you defined in the previous step.

Here is an example of the output showing the time of the capture, the IP address from which the packet was sent, the IP address, and the port the packet was sent to. In this example, 192.168.25.4 is the IP address of the SEC and port 10425 is the port on the SEC that receives NSEL events.

6 packets captured

```
1: 14:23:51.706308 192.168.0.169.16431 > 192.168.25.4.10425: UDP 476
2: 14:23:53.923017 192.168.0.169.16431 > 192.168.25.4.10425: UDP 248
3: 14:24:07.411904 192.168.0.169.16431 > 192.168.25.4.10425: UDP 1436
4: 14:24:07.411920 192.168.0.169.16431 > 192.168.25.4.10425: UDP 1276
5: 14:24:21.021208 192.168.0.169.16431 > 192.168.25.4.10425: UDP 112
6: 14:24:27.444755 192.168.0.169.16431 > 192.168.25.4.10425: UDP 196
```

Step 7 Run the **capture stop** command to manually stop the packet capture:

> **capture** *capture_name***stop**

Where *capture_name* is the name of the packet capture you defined in the previous step.

The packet capture shows NSEL packets being sent from the ASA to the SEC, confirming that NSEL events are successfully transmitted to the configured destination.

Check for live NSEL events

This task allows you to verify that NSEL events are being properly received and processed by the Cisco Cloud system.

Check for both live and historical events. This procedure will filter for NSEL events that the Cisco Cloud has received within the last hour.

Procedure

Step 1 In the left pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Live** tab.

Step 3 Pin-open the event filter.

Step 4 In the ASA Events section, make sure **NetFlow** is checked.

Step 5 In the Sensor ID field, enter the IP address of the ASA you configured to send NSEL events.

Step 6 At the bottom of the filter, make sure that **Include NetFlow Events** is checked.

The system displays live NSEL events from the specified ASA device, confirming that events are being successfully received and processed.

Check for historical NSEL events

Filter for NSEL events that the Cisco Cloud has received within a specific time-frame to verify event receipt and troubleshoot connectivity issues.

This procedure will filter for NSEL events that the Cisco Cloud has received within the time-frame you specify.

Procedure

Step 1 In the left pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Historical** tab.

Step 3 Pin-open the event filter.

Step 4 In the ASA Events section, make sure **NetFlow** is checked.

Step 5 Set the Start time far enough back in time to check if Security Cloud Control ever did receive NSEL events.

Step 6 In the Sensor ID field, enter the IP address of the ASA you configured to send NSEL events.

Step 7 At the bottom of the filter, make sure that **Include NetFlow events** is checked.

The historical event filter displays NSEL events received from the specified ASA within your configured time-frame, confirming successful event transmission to Cisco Cloud.

Parsed ASA syslog events

Parsed ASA syslog events are specialized syslog messages that

- contain more event attributes than other syslog events
- let you search on any specific parsed field, and
- are forwarded by the SEC to the Cisco cloud with italicized EventTypes for identification.

Parsed syslog event processing

The SEC forwards all ASA events you specify to the Cisco cloud but only specific syslog messages are parsed. All parsed Syslogs events are shown with their EvenTypes italicised to help you identify.

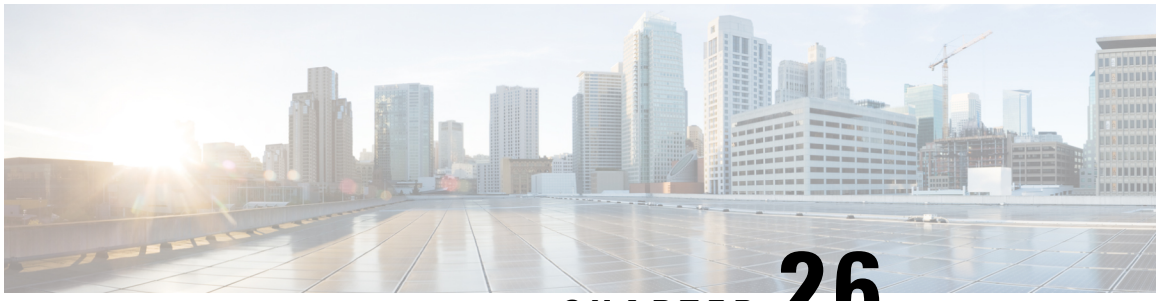
For detailed explanations of syslogs see, Cisco ASA Series Syslog Messages.

Syslog ID	Syslog Category	Purpose of syslog messge
106015	Firewall	Represents out of state TCP Deny
106023	Firewall	A real IP packet was denied by the ACL. This message appears even if you do not have the **log** option enabled for an ACL.
106100	Access Lists/User Session	Packet was permitted or denied by an ACL.
113019	User Authentication	Critical AnyConnect
302013, 302015, 302017, 302020	User Session	Connection start and end syslogs for TCP, UDP, GRE, and ICMP connection creation.
302014, 302016, 302018, 302021	User Session	Connection start and end syslogs for TCP, UDP, GRE, and ICMP connection creation.
302020 - 302021	User Session	ICMP session establishment and teardown.
305006	User Session/NAT and PAT	NAT connection failure
305011-305014	User Session/NAT and PAT	NAT Build/Teardown related
313001, 313008	IP Stack	Represents denied connections to the box.
414004	System	Critical AnyConnect

Syslog ID	Syslog Category	Purpose of syslog messge
609001 - 609002	Firewall	A network state container was reserved/removed for host **ip-address** connected to a zone.
710002,710004 710005	User Session	To the box connections failures
710003	User Session	Represents denied connections to the box.
746012, 746013	User Session	Critical AnyConnect

Related information:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Filtering Events in the Event Logging Page



CHAPTER 26

Monitor Cloud-Delivered Firewall Management Center-Managed Threat Defense Device Events

View events from Threat Defense devices that are managed by Cloud-Delivered Firewall Management Center in Security Cloud Control.

- About Security Analytics and Logging(SaaS) for Firewall Threat Defense, on page 739
- Implementing SAL (SaaS) for Cloud-Delivered Firewall Management Center-Managed Devices, on page 740
- Requirements and Guidelines, on page 740
- How Firewall Threat Defense Events are Displayed in Security Cloud Control Using a Direct Connection, on page 744
- Send Cloud-Delivered Firewall Management Center-Managed Event Logs to SAL (SaaS) Using a Direct Connection, on page 746
- Send Cloud-Delivered Firewall Management Center-Managed Events to SAL (SaaS) Using Syslog, on page 747
- Enable Individual Threat Defense Devices to Send Events to SAL (SaaS) Using a Direct Connection, on page 749
- View AI Defense Events in Security Cloud Control, on page 750

About Security Analytics and Logging(SaaS) for Firewall Threat Defense

SAL (SaaS) allows you to capture connection, intrusion, file, malware, and Security Intelligence events from all of your Firewall Threat Defense devices and view them in one place in Security Cloud Control. The events are stored in the Cisco cloud and are viewable from the **Event Logging** page in Security Cloud Control, where you can filter and review them to gain a clear understanding of what security rules are triggering in your network.

Implementing SAL (SaaS) for Cloud-Delivered Firewall Management Center-Managed Devices

To deploy this integration, you must set up event data storage in SAL (SaaS) using either syslog or a direct connection.

- Send Cloud-Delivered Firewall Management Center-Managed Event Logs to SAL (SaaS) Using a Direct Connection, on page 746
- Send Cloud-Delivered Firewall Management Center-Managed Events to SAL (SaaS) Using Syslog, on page 747

Requirements and Guidelines

Type	Description
Cisco Secure Firewall Threat Defense	• Security Cloud Control-managed standalone Firewall Threat Defense devices, Version, 7.2 and later. • To send events using syslog, you must have Firewall Threat Defense device, Version 6.4 or later. • To send events directly, you must have Firewall Threat Defense device, Version 7.2 or later. • To optionally exclude individual Firewall Threat Defense devices from sending events directly, you must have Firewall Threat Defense device, Version 7.4.1 or later. • Your firewall system must be deployed and successfully generating events.
Regional cloud	• Determine the regional cloud that you want to send events to. • Events cannot be viewed from or moved between different regional clouds. • If you use a direct connection to send events to the Cisco Security Cloud for integration with Cisco SecureX, or Cisco SecureX threat response, or Cisco XDR, you must use the same cloud region for this integration. • If you send events directly, the regional cloud you specify in Security Cloud Control must match the region of your Security Cloud Control tenant.

Type	Description
Security Analytics and Logging subscription plan	• You must have a valid Security Analytics and Logging subscription plan. For more information about the subscription plans, see Security Analytics and Logging Licenses. • If your do not have a Security Analytics and Logging plan subscribed, you can request a 90-day trial by logging in to Security Cloud Control and navigating to **Events & Logs** > **Events** > **Event Logging** tab. You can purchase the desired subscription plan by following the instructions in the Security Cloud Control Firewall Management Ordering Guide. • You must buy a data plan that reflects the number of events the Cisco cloud receives from your threat defense devices daily. This is called your daily ingest rate. • Use the Logging Volume Estimator Tool to estimate your data storage requirements.
Accounts	When you purchase a license for this integration, you are provided with a Security Cloud Control tenant account to support the integration.

Type	Description
Connectivity	

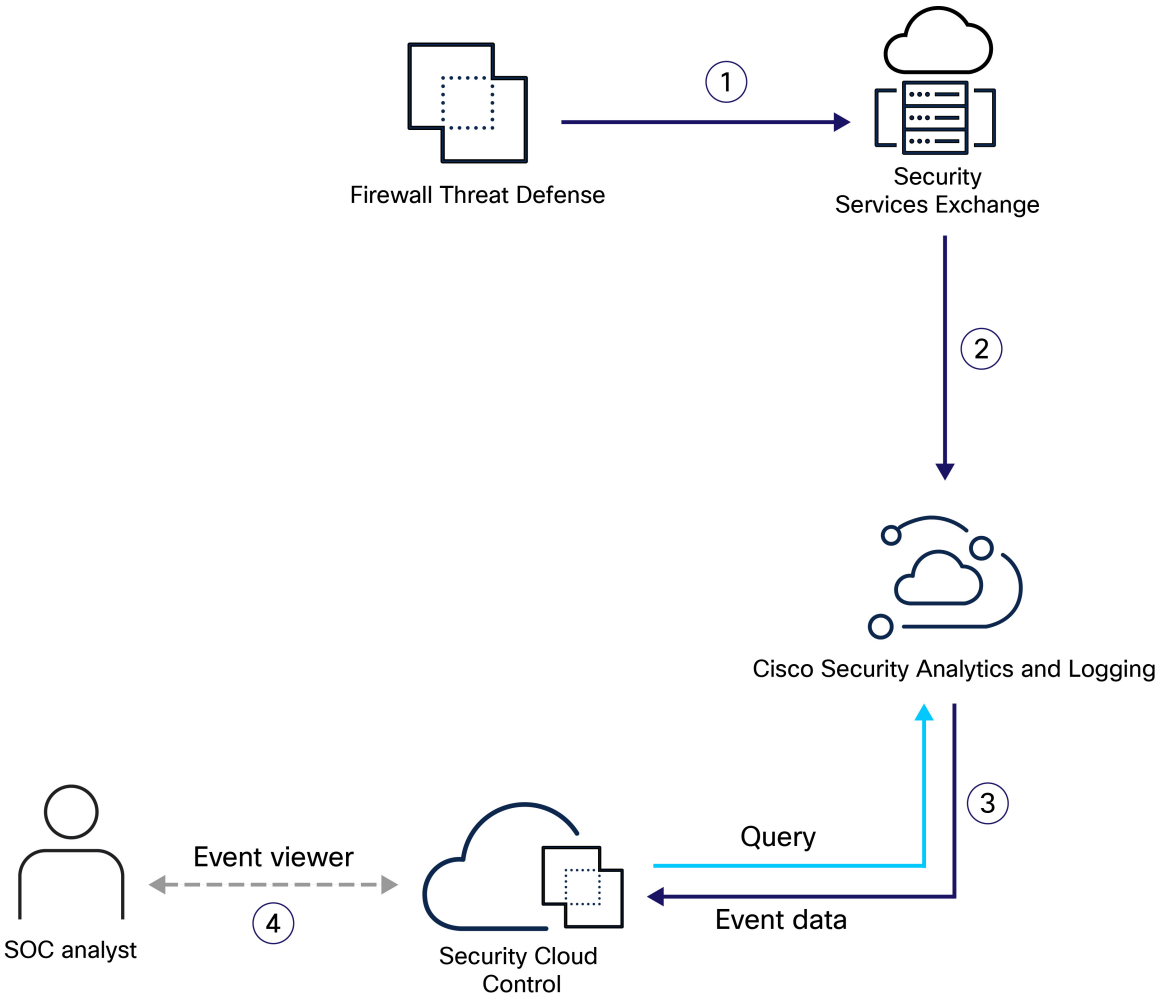
Type	Description
	The Firewall Threat Defense devices must be able to connect outbound on port 443 to the Cisco Security Cloud at the following addresses: • US region: • api-sse.cisco.com • mx*.sse.itd.cisco.com • dex.sse.itd.cisco.com • eventing-ingest.sse.itd.cisco.com • registration.us.sse.itd.cisco.com • us.manage.security.cisco.com • edge.us.cdo.cisco.com • EU region: • api.eu.sse.itd.cisco.com • mx*.eu.sse.itd.cisco.com • dex.eu.sse.itd.cisco.com • eventing-ingest.eu.sse.itd.cisco.com • registration.eu.sse.itd.cisco.com • eu.manage.security.cisco.com • edge.eu.cdo.cisco.com • Asia (APJ) region: • api.apj.sse.itd.cisco.com • mx*.apj.sse.itd.cisco.com • dex.apj.sse.itd.cisco.com • eventing-ingest.apj.sse.itd.cisco.com • registration.apj.sse.itd.cisco.com • apj.cdo.cisco.com • edge.apj.cdo.cisco.com • Australia region: • api.aus.sse.itd.cisco.com • mx*.aus.sse.itd.cisco.com • dex.au.sse.itd.cisco.com

Type	Description
	• eventing-ingest.aus.sse.itd.cisco.com • registration.au.sse.itd.cisco.com • aus.cdo.cisco.com • India region: • api.in.sse.itd.cisco.com • mx*.in.sse.itd.cisco.com • dex.in.sse.itd.cisco.com • eventing-ingest.in.sse.itd.cisco.com • registration.in.sse.itd.cisco.com • in.cdo.cisco.com

How Firewall Threat Defense Events are Displayed in Security Cloud Control Using a Direct Connection

This diagram describes how Firewall Threat Defense devices that are managed by Security Cloud Control shares security events (connection, security-related connection, intrusion, file, and malware events) with Security Cloud Control.

Figure 21: How Firewall Threat Defense events are displayed in Security Cloud Control



Step	Description
1	You configure the Firewall Threat Defense device to send security events directly to Cisco cloud. Security events are generated when logging is enabled on the Firewall Threat Defense device, and network traffic matches access control rule criteria. The Firewall Threat Defense device sends the events directly to Security Services Exchange.
2	Security Services Exchange aggregates the event data from all the Firewall Threat Defense devices, converts it to JSON format, and sends it to Security Analytics and Logging for storage.
3	Security Analytics and Logging process the event data using various services to classify and enrich it for use by the Security Cloud Control.
4	Security Analytics and Logging stores the event data in the cloud data store. Security Cloud Control queries the stored data to provide SOC analysts with the relevant information.

Send Cloud-Delivered Firewall Management Center-Managed Event Logs to SAL (SaaS) Using a Direct Connection

Configure the Cloud-Delivered Firewall Management Center to send events directly to SAL (SaaS). Follow this procedure to enable the Cisco cloud event global setting in the Cloud-Delivered Firewall Management Center. When needed, you can exclude individual Firewall Threat Defense devices from sending event logs to SAL (SaaS). For more information, see Enable or Disable Threat Defense Devices to Send Event logs to SAL (SaaS) Using a Direct Connection.

Before you begin

- Onboard devices to the Cloud-Delivered Firewall Management Center, assign licenses to these devices, and configure these devices to send events directly to SAL (SaaS).
- Enable connection logging on a per-rule basis by editing a rule and choosing the **Log at Beginning of Connection** and **Log at End of Connection** options.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 In the left pane, click **Administration** > **Firewall Management Center**.

Step 3 Click **Cloud-Delivered FMC**, and in the **System** pane that is located at the right-side, click **Cisco Cloud Events**.

Step 4 In the **Configure Cisco Cloud Events** widget, do the following:

a. Click the **Send Events to the Cisco Cloud** toggle button to enable the overall configuration.

b. Check the **Send Intrusion Events to the cloud** check box to send the intrusion events to the cloud.

c. Check the **Send File and Malware Events to the cloud** check box to send the file and malware events to the cloud.

d. Choose an option to send the connection events to the cloud:

- Click the **None** radio button to not send connection events to the cloud.
- Click the **Security Events** radio button to send only security intelligence events to the cloud.
- Click the **All** radio button to send all the connection events to the cloud.

e. Click **Save**.

Send Cloud-Delivered Firewall Management Center-Managed Events to SAL (SaaS) Using Syslog

This procedure provides information about the configuration for sending syslog messages for security events (connection, security intelligence, intrusion, file, and malware events) from devices managed by Security Cloud Control.

Before you begin

- Configure policies to generate security events, and verify that the events you expect to see are displayed in the applicable tables under the **AnalyticsEvents & Logs** menu.
- Gather information relating to the syslog server IP address, port, and protocol (UDP or TCP).
- Ensure that your devices can reach the syslog server.

Procedure

Step 1 In the left pane, click **Administration** > **Firewall Management Center** to open the **Services** page.

Step 2 Click and select **Cloud-Delivered FMC** and then click **Configuration**.

Step 3 Configure the syslog settings for your threat defense device:

a) Click **Devices** > **Platform Settings** and edit the platform settings policy that is associated with your threat defense device.

b) In the left-side navigation pane, click **Syslog** and configure the syslog settings as follows:

Click this UI Element...	To Do the Following:
Logging Setup	Enable logging, specify FTP server settings, and the Flash usage.
Logging Destination	Enable logging to specific destinations and to specify filtering by message severity level, event class, or by a custom event list.
E-mail Setup	Specify the email address that is used as the source address for syslog messages that are sent as emails.
Events Lists	Define a custom event list that includes an event class, a severity level, and an event ID.
Rate Limit	Specify the volume of messages being sent to all the configured destinations and define the message severity level to which you want to assign the rate limits.
Syslog Settings	Specify the logging facility, enable the inclusion of a time stamp, and enable other settings to set up a server as a syslog destination.

Click this UI Element...	To Do the Following:
Syslog Servers	Specify the IP address, protocol that is used, format, and security zone for the syslog server that is designated as a logging destination.

c) Click **Save**.

Step 4 Configure the general logging settings for the access control policy (including file and malware logging):

a) Click **Policies** > **Access Control** and then edit the access control policy that is associated with your threat defense device.

b) Click **More** and then choose **Logging**. Configure the general logging settings for the access control policy (including file and malware logging) as follows:

Click this UI Element...	To Do the Following:
Send using specific syslog alert	Select a syslog alert from the list of existing predefined alerts or add one by specifying the name, logging host, port, facility, and severity.
Use the syslog settings configured in the FTD Platform Settings policy deployed on the device	Unify the syslog configuration by configuring it in **Platform Settings** and reuse the settings in the access control policy. The selected severity is applied to all the connection and intrusion events. The default severity is **ALERT**.
Send Syslog messages for IPS events	Send events as syslog messages. The default syslog settings are used unless you override them.
Send Syslog messages for File and Malware events	Send file and malware events as syslog messages. The default syslog settings are used unless you override them.

c) Click **Save**.

Step 5 Enable logging for security intelligence events for the access control policy:

a) In the same access control policy, click the **Security Intelligence** tab.

b) Click the logging icon and enable security intelligence logging using the following criteria:

- By Domain Name—Click the logging icon next to the **DNS Policy** drop-down list.
- By IP address—Click the logging icon next to **Networks**.
- By URL—Click the logging icon next to **URLs**.

c) Click **Save**.

Step 6 Enable syslog logging for each rule in the access control policy:

a) In the same access control policy, click the **Access Control** tab.

b) Click a rule to edit.

c) Click the **Logging** tab in the rule.

d) Check the **Log at beginning of connection** and **Log at end of connection** check boxes.

e) If you want to log file events, check the **Log Files** check box.
f) Check the **Syslog Server** check box.
g) Verify that the rule is **Using default syslog configuration in Access Control Logging**.
h) Click **Confirm**.
i) Click **Apply** to save the rule.
j) Repeat steps 7.a through 7.h for each rule in the policy and click **Save** to save the policy.

Step 7 If you have made all the required changes, deploy your changes to the managed devices.

Enable Individual Threat Defense Devices to Send Events to SAL (SaaS) Using a Direct Connection

Enable or disable the FTD devices managed by the Cloud-Delivered Firewall Management Center to send events directly to SAL (SaaS). This device-level control allows you to optionally exclude specific FTD devices from sending event logs to the Cisco cloud to reduce traffic or to maintain a combination of SAL and on-premises event log storage.

Note

- To enable or disable sending events to the Cisco cloud from the FTD devices, enable the Cisco cloud event global setting in the Cloud-Delivered Firewall Management Center. For more information on enabling the Cisco cloud event global setting, see Send Cloud-Delivered Firewall Management Center-Managed Event Logs to SAL (SaaS) Using a Direct Connection, on page 746.

  Sending events to the Cisco cloud is enabled by default for all FTD devices when the Cisco cloud event global setting is enabled in the Cloud-Delivered Firewall Management Center.

- The option to enable or disable FTD devices to send event logs to the cloud is supported on FTD Version 7.4.1 or later.

Before you begin

- Onboard devices to the Cloud-Delivered Firewall Management Center, assign licenses to these devices, and configure these devices to send events directly to SAL (SaaS).
- Enable connection logging on a per-rule basis by editing a rule and choosing the **Log at Beginning of Connection** and **Log at End of Connection** options.

Procedure

Step 1 Log in to Security Cloud Control.
Step 2 From the left pane, click **InventorySecurity Devices**.
Step 3 Click the **Devices** tab to view the device.
Step 4 Click the **FTD** tab to view FTD devices.

Step 5 Choose the FTD devices whose configurations you want to edit, from the **Security Devices** list.

Step 6 In the **Device Management** pane, click **Cloud Events**.

Step 7 Click the **Send Events to the Cisco Cloud** toggle button to enable or disable the configuration.

Step 8 Click **Save**.

View AI Defense Events in Security Cloud Control

AI Defense events record activities within your AI environment. They capture interactions such as prompts submitted, responses generated, and any triggered AI Defense policy violations. Each event includes key information, such as the application and AI model involved, the specific rule triggered, and the action taken.

Before you begin

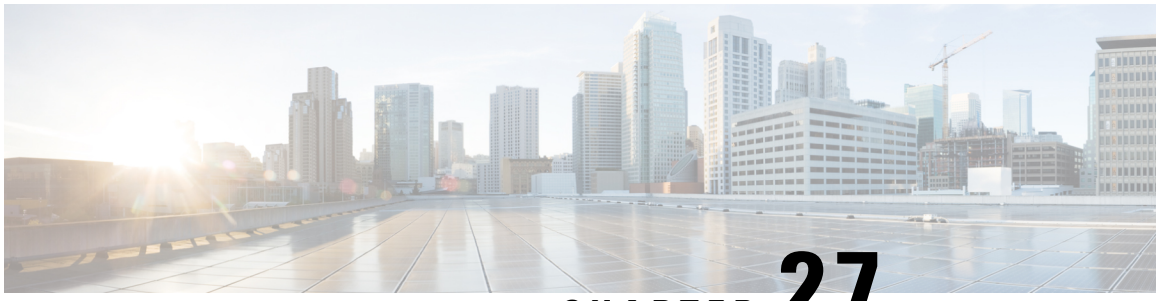
- Enable the AI Defense service in your Security Cloud Control tenant. For information on enabling the AI Defense service, see the AI Defense User Guide.
- You must be managing Firewall Threat Defense devices with Version 10.0 or higher.
- Enable your Firewall Threat Defense device to send events to the cloud. For more information, see Send Cloud-Delivered Firewall Management Center-Managed Event Logs to SAL (SaaS) Using a Direct Connection, on page 746.

Procedure

Step 1 In the navigation pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the filter icon ( ).

Step 3 Check the **AI Defense** check box.



CHAPTER 27

View Events in Security Cloud Control Firewall Management

This chapter provides information on how to view live and historical events in Security Cloud Control Firewall Management.

- View live events, on page 751
- View historical events, on page 753
- Customize the events view, on page 753
- Show and hide columns on the event logging page, on page 755
- Change the time zone for the event timestamps, on page 758
- Create and save customizable event filters, on page 758
- Event logging page search and filter functionality, on page 759
- Event attributes in security analytics and logging, on page 770

View live events

View live events to monitor the most recent activity including event details, device status, and reporting views for follow-up actions.

The Live events page shows the most recent 500 events that match the filter and search criteria you entered. If the Live events page displays the maximum of 500 events, and more events stream in, Security Cloud Control displays the newest live events, and transfers the oldest live events to the Historical events page, keeping the total number of live events at 500. That transfer takes roughly a minute to perform. If no filtering criteria is added, you will see all the latest Live 500 events generated by rules configured to log events.

The event timestamps are shown in UTC.

Changing the filtering criteria, whether live events are playing or paused, clears the events screen and restarts the collection process.

Procedure

Step 1 In the left pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Live** tab.

The Live events page displays the most recent 500 events matching your criteria, with event timestamps shown in UTC.

Play/pause live events

A play/pause live events feature is a streaming control mechanism that

- allows users to "play" or "pause" live events as they stream in
- displays events matching filtering criteria in the Events viewer when playing, and
- stops updating the Live events page when paused until restarted.

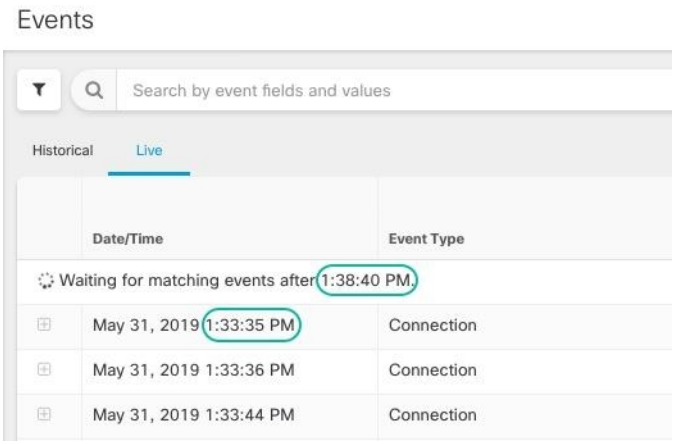
Live event streaming behavior

If live events are "playing," Security Cloud Control displays events that match the filtering criteria specified in the Events viewer in the order they are received. If events are paused, Security Cloud Control does not update the Live events page until you restart playing live events. When you restart playing events, Security Cloud Control begins populating events in the Live page from the point at which you restarted playing events. It doesn't back-fill the ones you missed.

To view all the events that Security Cloud Control received whether you played or paused live event streaming, click the **Historical** tab.

Auto-pause live events: After displaying events for about 5 consecutive minutes, Security Cloud Control warns you that it is about to pause the stream of live events. At that time, you can click the link to continue streaming live events for another 5 minutes or allow the stream to stop. You can restart the live events stream when you are ready.

Receiving and reporting events: There may be a small lag between the Secure Event Connector or the Security Service Exchange receiving events and Security Cloud Control posting events in the Live events viewer. You can view the gap on the Live page. The time stamp of the event is the time it was received by Secure Event Connector or the Security Service Exchange.



View historical events

View historical events to access events older than the most recent 500 that have been transferred from the Live events page to the Historical events table.

The Live events page shows the most recent 500 events that match the filter and search criteria you entered. Events older than the most recent 500 are transferred to the Historical events table. That transfer takes roughly a minute to perform. You can then filter all the events you have stored to find events you're looking for.

Procedure

Step 1 In the navigation pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Historical** tab. By default, when you open the Historical events table, the filter is set to display the events collected within the last hour.

The event attributes are largely the same as what is reported by Firepower Device Manager (FDM) or the Adaptive Security Device Manager (ASDM).

- For a complete description of Firepower Threat Defense event attributes, see Cisco FTD Syslog Messages.
- For a complete description of ASA event attributes, see Cisco ASA Series Syslog Messages.

The Historical events table displays filtered events, allowing you to review and analyze historical event data based on your specified criteria.

Customize the events view

Customize the events view to display only the columns and information that are relevant to your monitoring and analysis needs. This allows you to optimize the view for better performance and easier data interpretation.

Any changes made to the Event Logging page are automatically saved for when you navigate away from this page and come back at a later time.

Note The Live and Historical events view have the same configuration. When you customize the events view, these changes are applied to both the Live and Historical view.

Procedure

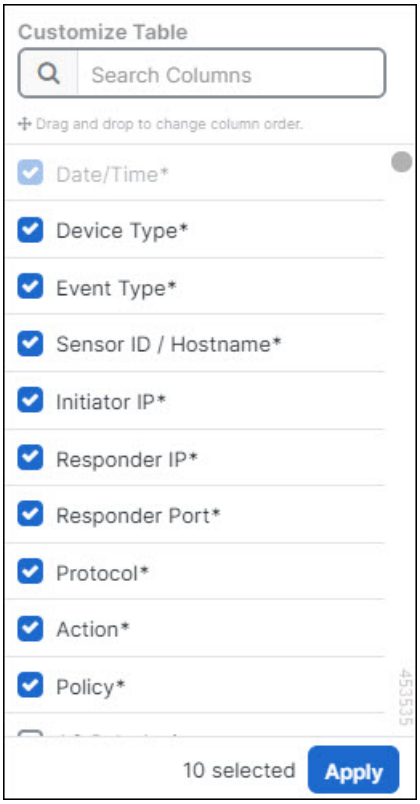
Step 1 Click the column filter icon located to the right of the columns.

You can modify the event view for both live and historical events to only include column headers that apply to the view you want.

Step 2 Select or deselect the columns you want.

Columns with asterisks are provided within the event table by default, although you can remove them at any time.

Figure 22: Show or hide columns



Step 3 Click **Apply**.

Step 4 Search for additional columns not part of the default list and add them to the event view.

You can search for more columns, which are not part of the default list, and add them to the event view for both live and historical events. Note that adding many columns for customizing the table may reduce performance. Consider using fewer columns for faster data retrieval.

Alternatively, click the + icon next to an event to expand it and view the hidden columns. Note that some of the event fields displayed when you expand an event can have a different name compared to the corresponding column name. To correlate the events fields displayed when you expand an event to the corresponding column name, see Correlate Threat Defense Event Fields and Column Names.

Step 5 Reorder the columns by dragging and dropping them in the column filter menu.

Click the column filter icon located to the right of the columns to view the list of selected columns. Then, drag and drop the columns into the order you want. The column at the top of the list in the drop-down menu appears as the left-most column in the event table.

The events view is customized with your selected columns and preferred order. These settings are automatically saved and will persist when you navigate away from and return to this page.

Correlate Firewall Threat Defense event fields and column names

On the Security Cloud Control **Event Logging** page, you can click on any event to expand its details and view all the associated event fields. Note that the names of some event fields may differ from those of the column headers in the Security Cloud Control event viewer where the values of these fields are displayed.

Table 41: Firewall Threat Defense Event Field and the Corresponding Security Cloud Control Column Name

Security Cloud Control Column Name	FTD Event Field
Date/Time	Timestamp
Detection Type	ClientAppDetector
Encrypted Visibility Fingerprint	EVE_Fingerprint
Encrypted Visibility Process Name	EVE_Process
Encrypted Visibility Process Confidence Score	EVE_ProcessConfidencePct
Encrypted Visibility Threat Confidence	EVE_ThreatConfidenceIndex
Encrypted Visibility Threat Confidence Score	EVE_ThreatConfidencePct
MITRE	MitreAttackGroups
NAT Source IP	NAT_InitiatorIP
NAT Source Port	NAT_InitiatorPort
Rule Group	SnortRuleGroups

Show and hide columns on the event logging page

-

The **Event Logging** page displays events sent to the Cisco cloud from configured ASA and FDM-managed devices.

You can show or hide columns on the **Event Logging** page by using the Show/Hide widget with the table:

Before you begin

-

Procedure

Step 1 In the left pane, choose **Events & Logs** > **Events** > **Event Logging** .

Step 2 Scroll to the far right of the table and click the column filter icon ≣ .

Step 3 Check the columns you want to see and uncheck the columns you want to hide.

Other users logging into the tenant will see the same columns you chose to show until columns are shown or hidden again.

This table describes the default column headers:

Column Header	Description
Date/Time	The time the device generated the event. By default, event timestamps are displayed in your Local time zone. To view event timestamps in UTC, see Change the time zone for the event timestamps, on page 758
Device Type	ASA (Adaptive Security Appliance) FTD (Firepower Threat Defense)

Event Type	This composite column can have any of the following:
	• **FTD Event Types**
	  • Connection: Displays connection events from access control rules.
	  • File: Displays events reported by file policies in access control rules.
	  • Intrusion: Displays events reported by intrusion policy in access control rules.
	  • Malware: Displays events reported by malware policies in access control rules.
	• **ASA Event Types** : These event types represent groups of syslog or NetFlow events. See ASA Event Types for more information about which syslog ID or which NetFlow ID is included in which group.
	  • Parsed Events: Parsed syslog events contain more event attributes than other syslog events and Security Cloud Control is able to return search results based on those attributes more quickly. Parsed events are not a filtering category; however, parsed event IDs are displayed in the Event Types column in *italics* . Event IDs that are not displayed in italics are not parsed.
	  • ASA NetFlow Event IDs: All Netflow (NSEL) events from ASA appear here.

Column Header	Description
Sensor ID / Hostname	The Sensor ID is the IP address from which events are sent to Security Service Exchange or Secure Event Connector. This is typically the management interface on the threat defense or the ASA.
Initiator IP	This is the IP address of the source of the network traffic. The value of the Initiator address field corresponds to the value of the InitiatorIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
Responder IP	This is the destination IP address of the packet. The value of the Destination address field corresponds to the value in the ResponderIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
Port	The port or ICMP code used by the session **responder** . The value of the destination port corresponds to the value of the **ResponderPort** in the event details.
Protocol	It represents the protocol in the events.
Action	Specifies the security action defined by the rule. The value you enter must be an exact match to what you want to find; however, the case doesn't matter. Enter different values for connection, file, intrusion, malware, syslog, and NetFlow event types: • For connection event types, the filter searches for matches in the AC_RuleAction attribute. Those values could be Allow, Block, Trust. • For file event types, the filter searches for matches in the FileAction attribute. Those values could be Allow, Block, Trust. • For intrusion event types, the filter searches for matches in the InLineResult attribute. Those values could be Allowed, Blocked, Trusted. • For malware event types, the filter searches for matches in the FileAction attribute. Those values could be Cloud Lookup Timeout. • For syslog and NetFlow events types, the filter searches for matches in the Action attribute.

Column Header	Description
Policy	The name of the policy that triggered the event. Names will be different for ASA and FDM-managed devices.

Refer to Event logging page search and filter functionality, on page 759.

Change the time zone for the event timestamps

This task allows you to switch between UTC and local time zone display for event timestamps to match your preferred time reference.

Change the time zone display for event timestamps on the Security Cloud Control **Event Logging** page.

Procedure

Step 1 From the left pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **UTC Time** or **Local Time** button on the top right side of the **Event Logging** page to display the event timestamps in the selected time zone.

By default, event timestamps are displayed in your local time zone.

Event timestamps are now displayed in your selected time zone (UTC or local time) throughout the Event Logging page.

Create and save customizable event filters

Create and save custom filters to quickly access frequently used filter criteria for event logging analysis.

If you are a Secure Logging Analytics (SaaS) customer, you can create and save custom filters that you use frequently.

The elements of your filter are saved to a filter tab as you configure them. Whenever you return to the Event Logging page, these searches will be available to you. They will not be available to other Security Cloud Control users of the tenant. They will not be available to you on a different tenant, if you manage more than one tenant.

Note Be aware that when you are working in a filter tab, if you modify any filter criteria, those changes are saved to your custom filter tab automatically.

Procedure

Step 1 From the main menu, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Clear the Search field of any values.

Step 3 Above the event table, click the blue plus button to add a View tab.

Filter views are labeled "View 1", "View 2", "View 3" and so on until you give them a name.



Step 4 Select a view tab.

Step 5 Open the filter bar and select the filters attributes you want in your custom filter.

See Event logging page search and filter functionality, on page 759. Remember that only filter attributes are saved in the custom filter.

Step 6 Customize the columns you want to show in the event logging table.

See Show and hide columns on the event logging page, on page 755 for a discussion of showing and hiding columns.

Step 7 Double-click the filter tab with the "View X" label and rename it.

Step 8 (Optional) Now that you have created a custom filter, you can fine tune the results displayed on the Event Logging page, without changing the custom filter, by adding search criteria to the Search field.

See Event logging page search and filter functionality, on page 759.

You have successfully created and saved a custom event filter that will be available to you whenever you return to the Event Logging page.

Event logging page search and filter functionality

Event logging page search and filter functionality is a data management feature that

- enables you to search and filter historical and live event tables for specific events using the same mechanisms as other information in Security Cloud Control,
- limits what displays on the **Event Logging** page as you add filter criteria, and
- allows you to combine filtering and searching mechanisms where search finds values from filtered event results.

Event logging search and filter options

These are the options to conduct a search for event logs:

- Search events using the events logging page, on page 766

- Search historical events in the background, on page 768

Filtering works the same way for live events as it does for historical events with the exception that live events cannot be filtered by time.

Learn about these filtering methods:

- Filter live or historical events, on page 760
- Filter only NetFlow events, on page 762
- Filter for ASA or FDM-Managed Device Syslog Events but not ASA NetFlow Events, on page 762
- Combine filter elements, on page 762

Filter live or historical events

Filter events to view specific subsets of live or historical events in the Event Logging page, which helps in analyzing security events more effectively.

This procedure explains how to use event filtering to see a subset of events in the **Event Logging** page. If you find yourself repeatedly using certain filter criteria, you can create a customized filter and save it. See Customizable Event Filters for more information.

Procedure

Step 1 In the navigation bar, choose **Events & Logs** > **Events** > **Event Logging**

Step 2 Click either the **Historical** or **Live** tab.

Step 3 Click the filter icon ( ). Click the pin icon ( ) to pin the **Filter** pane and keep it open.

Step 4 Click a view tab that has no saved filter elements.



Step 5 Select the event details you want to filter by:

- **FTD Events**:
  - Connection: Displays connection events from access control rules.
  - File: Displays events reported by file policies in access control rules.
  - Intrusion: Displays events reported by intrusion policy in access control rules.
  - Malware: Displays events reported by malware policies in access control rules.
- **ASA Events**: These event types represent groups of syslog or NetFlow events.

  See Security Cloud Control Event Types for more information about events.
  - Parsed Events: Parsed syslog events contain more event attributes than other syslog events and Security Cloud Control is able to return search results based on those attributes more quickly. Parsed events are not a filtering category; however, parsed event IDs are displayed in the Event Types column in *italics*. Event IDs that are not displayed in italics are not parsed.

- **Time Range**: Click the Start or End time fields to select the beginning and end of the time period you want to display. The time stamp is displayed in the local time of your computer.
- **Action**: Specifies the security action defined by the rule. The value you enter must be an exact match to what you want to find; however, the case doesn't matter. Enter different values for connection, file, intrusion, malware, syslog, and NetFlow event types:
  - For connection event types, the filter searches for matches in the AC_RuleAction attribute. Those values could be Allow, Block, Trust.
  - For file event types, the filter searches for matches in the FileAction attribute. Those values could be Allow, Block, Trust.
  - For intrusion event types, the filter searches for matches in the InLineResult attribute. Those values could be Allowed, Blocked, Trusted.
  - For malware event types, the filter searches for matches in the FileAction attribute. Those values could be Cloud Lookup Timeout.
  - For syslog and NetFlow events types, the filter searches for matches in the Action attribute.
- **Sensor ID / Hostname**: The Sensor ID is the management IP address from which events are sent to the Secure Event Connector or Security Service Exchange.

  For an FDM-managed device, the Sensor ID is typically the IP address of the device's management interface.
- **IP addresses**
  - **Initiator**: This is the IP address of the source of the network traffic. The value of the Initiator address field corresponds to the value of the InitiatorIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
  - **Responder**: This is the destination IP address of the packet. The value of the Destination address field corresponds to the value in the ResponderIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
- **Ports**
  - **Initiator**: The port or ICMP type used by the session initiator. The value of the source port corresponds to the value fo the InitiatorPort in the event details. (Add a range - starting port ending port and space in between or both initiator and responder)
  - **Reponder**: The port or ICMP code used by the session responder. The value of the destination port corresponds to the value of the ResponderPort in the event details.
- **NetFlow**: ASA NetFlow events are different than syslog events. The NetFlow filter searches for all NetFlow events IDs that resulted in an NSEL record. Those "NetFlow event IDs" are defined in the Cisco ASA NetFlow Implementation Guide.

Step 6 (Optional) Save your filter as a custom filter by clicking out of the view tab.

The Event Logging page displays only the events that match your selected filter criteria. You can further refine your search by adjusting the filter parameters or save the filter configuration for future use.

Filter only NetFlow events

Filter the Event Logging table to display only ASA NetFlow events, removing other event types from view for focused analysis.

This procedure finds only ASA NetFlow events in the Event Logging interface.

Procedure

Step 1 From the left menu, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the Filter icon and pin the filter open.

Step 3 Check **Netflow** ASA Event filter.

Step 4 Clear all other ASA Event filters.

Only ASA NetFlow events are displayed in the Event Logging table.

The Event Logging table displays only ASA NetFlow events, with all other event types filtered out.

Filter for ASA or FDM-Managed Device Syslog Events but not ASA NetFlow Events

This task allows you to isolate syslog events for troubleshooting and analysis by filtering out NetFlow events that may clutter the event view.

This procedure finds only syslog events by ensuring NetFlow events are excluded from both the general filter settings and the ASA Events filter tree.

Procedure

Step 1 In the left pane, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the Filter icon and pin the filter open.

Step 3 Scroll to the bottom of the **Filter** pane and make sure the **Include NetFlow events** filter is **unchecked**.

Step 4 Scroll back up to the ASA Events filter tree, and make sure the **NetFlow** box is **unchecked**.

Step 5 Select the rest of your ASA or FTD filter criteria.

The event logging interface now displays only ASA or FTD syslog events with NetFlow events excluded from the view.

Combine filter elements

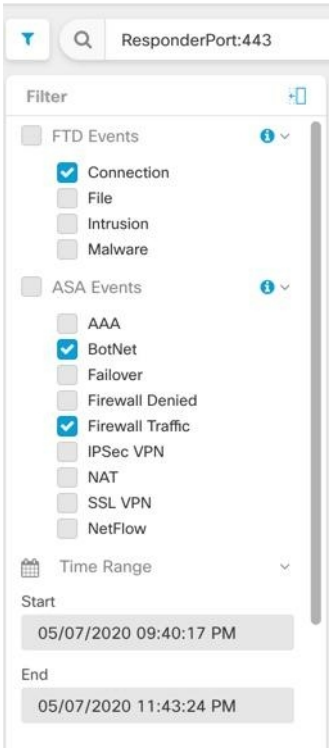
Combine filter elements is a filtering mechanism that

- follows standard filtering rules where categories are "AND-ed" AND values within categories are "OR-ed"

- allows combination of filters with custom search criteria
- applies "OR" logic to device event filters, AND
- enables filtering by historical events within a time range.

Filter combination behavior

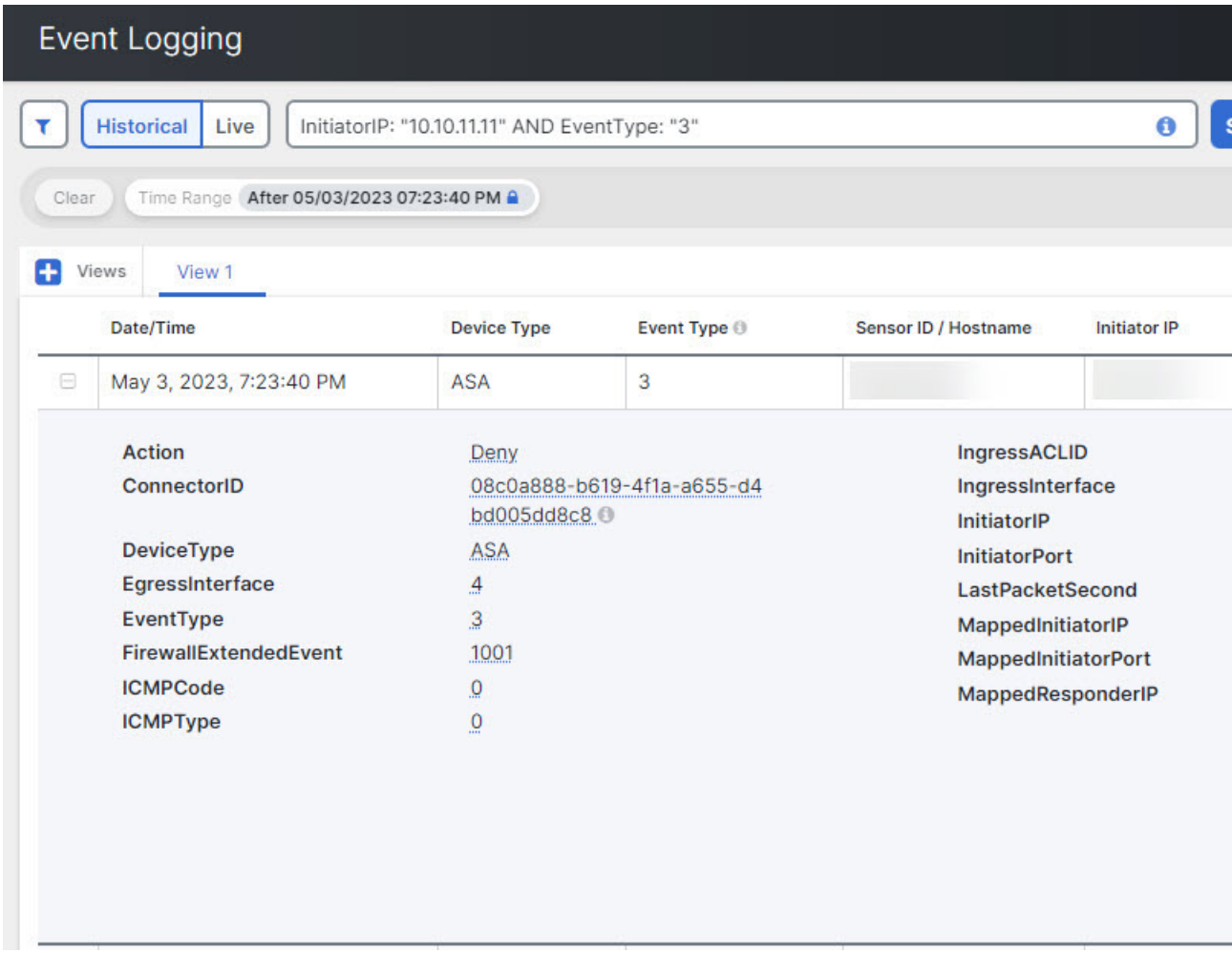
Filtering events generally follows the standard filtering rules in Security Cloud Control: The filtering categories are "AND-ed" AND the values within the categories are "OR-ed." You can also combine the filter with your own search criteria. In the case of event filters; however, the device event filters are also "OR-ed."



With this filter in use, Security Cloud Control would display Firewall Threat Defense device connection events **OR** ASA BotNet **OR** Firewall Traffic events, **AND** those events that occurred between the two times in the time range, **AND** those events that also contain the ResponderPort 443. You can filter by historical events within a time range. The live events page always displays the most recent events.

Search for specific attribute: value pairs

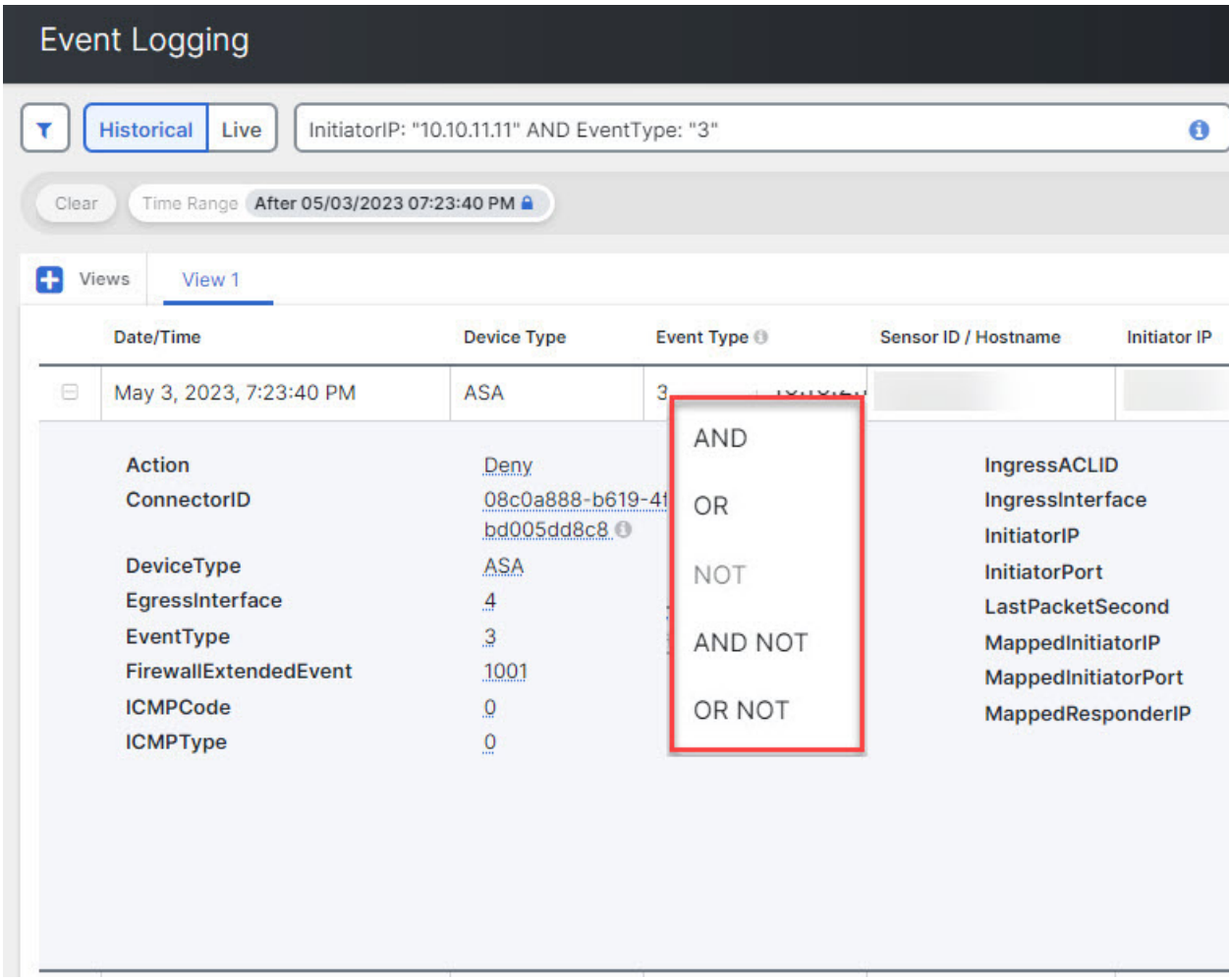
You can search for live OR historical events by entering an event attribute AND a value in the search field. The easiest way to do this is to click the attribute in the Event Logging table that you want to search for, AND Security Cloud Control enters it in the Search field. The events you can click on will be blue when you roll over them.



In this example, the search started by rolling over the InitiatorIP value of 10.10.11.11 AND clicking it. Initiator IP AND it's value were added to the search string. Next, Event Type, 3 was rolled-over AND clicked AND added to the search string AND an AND was added by Security Cloud Control. So the result of this search will be a list of events that were initiated from 10.10.11.11 AND that are 3 event types.

Notice the magnifying glass next to the value 3 in the example above. If you roll-over the magnifying glass, you could also choose an AND, OR, AND NOT, OR NOT operator to go with the value you want to add to the search.

In the example below, "OR" is chosen. The result of this search will be a list of events that were initiated from 10.10.11.11 OR are a 106023 event type. Note that if the search field is empty AND you right click a value from the table, only NOT is available as there is no other value.



As long as you rollover a value AND it is highlighted blue, you can add that value to the search string.

AND, OR, NOT, AND NOT, OR NOT filter operators behavior:

- **AND**: Use the AND operator in the filter string, to find events that include all attributes. The AND operator cannot begin a search string.
- **OR**: Use the OR operator in the filter string, to find events that include any of the attributes. The OR operator cannot begin a search string.
- **NOT**: Use this only at the beginning of a search string to exclude events with certain attributes.
- **AND NOT**: Use the AND NOT operator in the filter string to exclude events that contain certain attributes. AND NOT cannot be used at the beginning of a search string.
- **OR NOT**: Use the OR NOT operator to include search results that exclude certain elements. The OR NOT operator cannot be used at the beginning of a search string.

Filter operator examples

AND example:

For example, the search string below will search for events that contain the TCP protocol AND that originated from InitiatorIP address 10.10.10.43, AND that were sent from the Initiator port 59614. One would expect that with each additional AND statement, the number of events that meet the criteria would be small AND smaller.

```
Protocol: "tcp" AND InitiatorIP: "10.10.10.43" AND InitiatorPort: "59614"
```

OR example:

For example, the search string below will display events in the event viewer that include events that include the TCP protocol, OR that originated from InitiatorIP address 10.10.10.43, OR that were sent from the Initiator port 59614. One would expect that with each additional OR statement, the number of events that meet the criteria would be bigger AND bigger.

```
Protocol: "tcp" OR InitiatorIP: "10.10.10.43" OR InitiatorPort: "59614"
```

NOT example:

For example, this search string would exclude any event with the InitiatorIP 192.168.25.3 from the results.

```
NOT InitiatorIP: "192.168.25.3"
```

AND NOT example:

For example, this filter string will display events with the InitiatorIP 192.168.25.3 but NOT those whose ResponderIP address is also 10.10.10.1.

```
InitiatorIP: "192.168.25.3" AND NOT ResponderIP: "10.10.10.1"
```

You can also combine NOT AND AND NOT to exclude several attributes. For example this filter string, will exclude events with InitiatorIP 192.168.25.3 AND events with ResponderIP 10.10.10.1

```
NOT InitiatorIP: "192.168.25.3" AND NOT ResponderIP: "10.10.10.1"
```

OR NOT example:

For example, this search string will find events with the Protocol of TCP, OR that have the InitiatorIP of 10.10.10.43, OR those NOT from InitiatorPort 59614.

```
Protocol: "tcp" OR InitiatorIP: "10.10.10.43" OR NOT InitiatorPort: "59614"
```

You could also think of it this way: Search for (Protocol: "TCP") OR (InitiatorIP: "10.10.10.43") OR (NOT InitiatorPort: "59614").

Wildcard searches:

Use an asterisk (*) to represent a wildcard in the value field of an **attribute:value** search to find results within events. For example, this filter string,

```
URL:*feedback*
```

will find strings in the URL attribute field of events that contain the string **feedback**.

Related information:

- Show AND Hide Columns on the Event Logging Page
- Event Attributes in Security Analytics AND Logging

Search events using the events logging page

This task allows you to search all logged events and find the information you need using the search and report capabilities in the Event Logging page.

Use the search and report capabilities in the **Event Logging** page to search all logged events and find the information you need. Note that you can generate reports only for historical events.

Procedure

Step 1 In the navigation bar, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click either the **Historical** or **Live** tab.

Step 3 Type the search query in the search bar and click **Search** to execute the search.

Alternatively, click the search box to choose from a list of **Sample Filters** to quickly search for events. Use the sample filters to quickly populate a search query in the search bar and then modify it to match your specific needs. Find more information about using the sample filters in Use sample filters to search events, on page 767.

Step 4 (optional)To run a search in the background and generate a report while you move away from the search page, do these steps:

a) Type your search query and choose **Schedule Report** from the **Search** drop-down list.

b) Click **Generate Report**.

The search is queued, and you are notified when it is complete. You can run multiple searches in the background.

For more information about scheduling a report, refer to Schedule to generate a search report in the background, on page 768

Step 5 (Optional) If you want to view and manage your search reports, click **Reports**.

From this view, you can do these actions:

- The **Reports** page allows you to view, download, or delete the search reports.
- Click **Schedule a Report** to generate a one-time report or to schedule a recurring report.
- Click **View Notification Settings** to navigate to the **Notification Preferences** page to view or modify your notification settings.

You can convert any one-time report into a recurring report schedule if you need recurring searches. For more information, refer to Schedule to generate a search report in the background, on page 768.

You have successfully searched for events and can view the results in the Event Logging page. Any scheduled reports will run in the background and notify you when complete.

Use sample filters to search events

Sample filters allow you to construct common search queries quickly without requiring you to type the full query.

You can select a filter and modify the query parameters to fit your specific needs when searching for events.

Procedure

Step 1 In the **Event Logging** page, click the search bar.

A list of **Sample Filters** appears below the search bar.

Step 2 Choose a filter from the drop-down list.

The search bar automatically populates with the corresponding search query.

Step 3 Modify the values in the predefined query to refine your search.

Examples

- To search for events related to a specific website, select **Wildcard URL**. The search bar displays **URL: "*.sharepoint.com"**. You can then change sharepoint.com to any other domain you wish to investigate.
- To search for events involving a specific device, select **Specific Host**. The search bar displays **InitiatorIP: "192.168.55.55" OR ResponderIP: "192.168.55.55"**. Change 192.168.55.55 to the IP address of the device you want to monitor.

Step 4 Click **Search**.

The search results display events that match your filter criteria, allowing you to analyze specific network activity OR investigate particular devices OR websites.

Search historical events in the background

A background historical event search is a feature that allows you to define search criteria and search for event logs based on that criteria, with the **Reports** feature enabling you to perform the event log searches in the background and generate reports.

Background search capabilities

The background search functionality provides these capabilities:

- You receive a notification when the report generation is complete, based on your configured notification preferences.
- You can view, download, or delete the reports from the **Reports** page.
- You can schedule to generate either a one-time report or a recurring report.
- Navigate to the **Notification Settings** page to view or modify the subscription options.

Schedule to generate a search report in the background

Use the **Report** feature to run one-time or scheduled event log searches in the background and generate reports for analysis and compliance purposes.

You can modify or cancel the scheduled report at any time. You can also modify a one-time search query to be a recurring search.

- You can schedule to generate reports only for historical events.

- You can opt to get alerts on reports that have started, completed, or have failed.

Before you begin

Follow these steps to schedule a search and generate report:

Procedure

Step 1 In the navigation bar, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Historical** tab to view historical events.

Step 3 Type the search query in the search bar.

Step 4 Click the **Search** drop-down and choose **Schedule Report**.

Step 5 (Optional) Enter a name for the report to identify it.

Step 6 The **Generate report now** check box is checked by default. When checked, the report generation starts upon saving.

Step 7 Check the **Setup recurring schedule** check box and configure these settings:

- **Search Logs for the Last**: Specify how far back you want to search through.
- **Frequency**: Specify how frequent you want the scheduled search to occur and the time at which you want it to run.

Step 8 Confirm the scheduled search criteria at the bottom of the window. Click **Schedule and Generate Now**. If you did not opt for the search to start immediately, click **Schedule Report**.

Scheduled search reports are available to view for up to seven days before Security Cloud Control automatically deletes them.

The scheduled search is created and will generate reports according to the specified frequency. If you opted to generate the report immediately, the initial report generation begins upon saving.

Download a search report

Download search results and scheduled queries in CSV format for local storage and analysis before they are automatically removed after seven days.

Search results and schedules queries are stored for seven days before Security Cloud Control automatically removes them. You can download a copy of the search report in CSV format.

Procedure

Step 1 In the navigation bar, choose **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click **Reports**.

Step 3 In the **Actions** column, click **Download** next to the report to download it. The report file in CSV format is automatically downloaded to the default storage location on your local drive.

Step 4 (Optional) To view the search query and download the report, follow these steps:

a) click **Queries** tab.
b) Expand the report to see the search query details.
c) Click **View Reports** next to the report you want to view and download.
d) Click **Download**.

The search report is downloaded in CSV format to your local drive's default storage location, allowing you to analyze the data before it is automatically removed from the system.

Event attributes in security analytics and logging

Event attributes in Security Analytics and Logging are data elements that

- provide detailed information about security events and logging activities
- are largely the same as what is reported by Firepower Device Manager (FDM) and Adaptive Security Device Manager (ASDM), and
- include parsed events and additional attributes for filtering Event Logging table contents using attribute:value pairs.

Event attribute descriptions

The event attribute descriptions used by Security Cloud Control are largely the same as what is reported by Firepower Device Manager (FDM) and Adaptive Security Device Manager (ASDM).

- For a complete description of FDM-managed device event attributes, see Cisco Firepower Threat Defense Syslog Messages.
- For a complete description of Adaptive Security Appliance (ASA) event attributes, see Cisco ASA Series Syslog Messages.

Some ASA syslog events are "parsed" and others have additional attributes which you can use when filtering the contents of the Event Logging table using attribute:value pairs. See these additional topics for other important attributes of syslog events:

- Parsed ASA Syslog Events
- EventGroup and EventGroupDefinition Attributes for Some Syslog Messages
- Event Name Attributes for Syslog Events
- Time Attributes

EventGroup and EventGroupDefinition attributes for some syslog messages

Some syslog events will have the additional attributes "EventGroup" and "EventGroupDefinition". You will be able to filter the events table to find events using these additional attributes by filtering by attribute:value pairs. For example, you could filter for Application Firewall events by entering `apfw:415*` in the search field of the Event Logging table.

Syslog message classes and associated message ID numbers

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
aaa/auth	User Authentication	109, 113
acl/session	Access Lists/User Session	106
apfw	Application Firewall	415
bridge	Transparent Firewall	110, 220
ca	PKI Certification Authority	717
citrix	Citrix Client	723
clst	Clustering	747
cmgr	Card Management	323
config	Command Interface	111, 112, 208, 308
csd	Secure Desktop	724
cts	Cisco TrustSec	776
dap	Dynamic Access Policies	734
EAP, eapoudp	EAP or EAPoUDP for Network Admission Control	333, 334
EIGRP	EIGRP Routing	336
email	E-mail Proxy	719
ipaa/envmon	Environment Monitoring	735
ha	Failover	101, 102, 103, 104, 105, 210, 311, 709
idfw	Identity-based Firewall	746
ids	Intrusion Detection System	733
ids/ips	Intrusion Detection System / Intrusion Protection System	400
ikev2	IKEv2 Toolkit	750, 751, 752
IP	IP Stack	209, 215, 313, 317, 408
ipaa	IP Address Assignment	735
ips	Intrusion Protection System	401, 420
ipv6	IPv6	325
l4tm	Block lists, Allow lists, grey lists	338
lic	Licensing	444
MDM-proxy	MDM Proxy	802
nac	Network Admission Control	731, 732

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
VPN/nap	IKE and IPsec / Network Access Point	713
NP	Network Processor	319
OSPF	OSPF Routing	318, 409, 503, 613
passwd	Password Encryption	742
pp	Phone Proxy	337
RIP	RIP Routing	107, 312
rm	Resource Manager	321
sch	Smart Call Home	120
session	User Session	108, 201, 202, 204, 302, 303, 304, 314, 405, 406, 407, 500, 502, 607, 608, 609, 616, 620, 703, 710
session/natpat	User Session/NAT and PAT	305
SNMP	SNMP	212
ssafe	ScanSafe	775
SSL/NP SSL	SSL Stack/NP SSL	725
svc	SSL VPN Client	722
sys	System	199, 211, 214, 216, 306, 307, 315, 414, 604, 605, 606, 610, 612, 614, 615, 701, 711, 741
tre	Transactional Rule Engine	780
ucime	UC-IME	339
tag-switching	Service Tag Switching	779
td	Threat Detection	733
vm	VLAN Mapping	730
vpdn	PPTP and L2TP Sessions	213, 403, 603
VPN	IKE and IPsec	316, 320, 402, 404, 501, 602, 702, 713, 714, 715
vpnc	VPN Client	611
vpnfo	VPN Failover	720
vpnlb	VPN Load Balancing	718
VXLAN	VXLAN	778
webfo	WebVPN Failover	721
webvpn	WebVPN and AnyConnect Client	716

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
session/natpat	User Session / NAT and PAT	305

EventName Attributes for Syslog Events

Some syslog events will have the additional attribute "EventName". You will be able to filter the events table to find events using the EventName attribute by filtering by attribute:value pairs. For example, you could filter events for a "Denied IP packet" by entering **EventName:"Denied IP Packet"** in the search field of the Event Logging table.

Syslog Event ID and Event Names Tables

- AAA Syslog Event IDs and Event Names
- Botnet Syslog Event IDs and Event Names
- Failover Syslog Event IDs and Event Names
- Firewall Denied Syslog Event IDs and Event Names
- Firewall Traffic Syslog Event IDs and Event Names
- Identity Based Firewall Syslog Event IDs and Event Names
- IPSec Syslog Event IDs and Event Names
- NAT Syslog Event ID and Event Names
- SSL VPN Syslog Event IDs and Event Names

AAA Syslog Event IDs and Event Names

EventID	EventName
109001	AAA Begin
109002	AAA Failed
109003	AAA Server Failed
109005	Authentication Success
109006	Authentication Failed
109007	Authorization Success
109008	Authorization Failed
109010	AAA Pending
109011	AAA Session Started
109012	AAA Session Ended
109013	AAA

EventID	EventName
109014	AAA Failed
109016	AAA ACL not found
109017	AAA Limit Reach
109018	AAA ACL Empty
109019	AAA ACL error
109020	AAA ACL error
109021	AAA error
109022	AAA HTTP limit reached
109023	AAA auth required
109024	Authorization Failed
109025	Authorization Failed
109026	AAA error
109027	AAA Server error
109028	AAA Bypassed
109029	AAA ACL error
109030	AAA ACL error
109031	Authentication Failed
109032	AAA ACL error
109033	Authentication Failed
109034	Authentication Failed
109035	AAA Limit Reach
113001	AAA Session limit reach
113003	AAA overridden
113004	AAA Successful
113005	Authorization Rejected
113006	AAA user locked
113007	AAA User unlocked
113008	AAA successful

EventID	EventName
113009	AAA retrieved
113010	AAA Challenge received
113011	AAA retrieved
113012	Authentication Successful
113013	AAA error
113014	AAA error
113015	Authentication Rejected
113016	AAA Rejected
113017	AAA Rejected
113018	AAA ACL error
113019	AAA Disconnected
113020	AAA error
113021	AAA Logging Fail
113022	AAA Failed
113023	AAA reactivated
113024	AAA Client certification
113025	AAA Authentication fail
113026	AAA error
113027	AAA error

Botnet Syslog Event IDs and Event Names

EventID	EventName
338001	Botnet Source Block List
338002	Botnet Destination Block List
338003	Botnet Source Block List
338004	Botnet Destination Block List
338101	Botnet Source Allow List
338102	Botnet destination Allow List
338202	Botnet destination Grey

EventID	EventName
338203	Botnet Source Grey
338204	Botnet Destination Grey
338301	Botnet DNS Intercepted
338302	Botnet DNS
338303	Botnet DNS
338304	Botnet Download successful
338305	Botnet Download failed
338306	Botnet Authentication failed
338307	Botnet Decrypt failed
338308	Botnet Client
338309	Botnet Client
338310	Botnet dyn filter failed

Failover Syslog Event IDs and Event Names

EventID	EventName
101001	Failover Cable OK
101002	Failover Cable BAD
101003	Failover Cable not connected
101004	Failover Cable not connected
101005	Failover Cable reading error
102001	Failover Power failure
103001	No response from failover mate
103002	Failover mate interface OK
103003	Failover mate interface BAD
103004	Failover mate reports failure
103005	Failover mate reports self failure
103006	Failover version incompatible
103007	Failover version difference
104001	Failover role switch

EventID	EventName
104002	Failover role switch
104003	Failover unit failed
104004	Failover unit OK
106100	Permit/Denied by ACL
210001	Stateful Failover error
210002	Stateful Failover error
210003	Stateful Failover error
210005	Stateful Failover error
210006	Stateful Failover error
210007	Stateful Failover error
210008	Stateful Failover error
210010	Stateful Failover error
210020	Stateful Failover error
210021	Stateful Failover error
210022	Stateful Failover error
311001	Stateful Failover update
311002	Stateful Failover update
311003	Stateful Failover update
311004	Stateful Failover update
418001	Denied Packet to Management
709001	Failover replication error
709002	Failover replication error
709003	Failover replication start
709004	Failover replication complete
709005	Failover receive replication start
709006	Failover receive replication complete
709007	Failover replication failure
710003	Denied access to Device

Firewall Denied Syslog Event IDs and Event Names

EventID	EventName
106001	Denied by Security Policy
106002	Outbound Deny
106006	Denied by Security Policy
106007	Denied Inbound UDP
106008	Denied by Security Policy
106010	Denied by Security Policy
106011	Denied Inbound
106012	Denied due to Bad IP option
106013	Dropped Ping to PAT IP
106014	Denied Inbound ICMP
106015	Denied by Security Policy
106016	Denied IP Spoof
106017	Denied due to Land Attack
106018	Denied outbound ICMP
106020	Denied IP Packet
106021	Denied TCP
106022	Denied Spoof packet
106023	Denied IP Packet
106025	Dropped Packet failed to Detect context
106026	Dropped Packet failed to Detect context
106027	Dropped Packet failed to Detect context
106100	Permit/Denied by ACL
418001	Denied Packet to Management
710003	Denied access to Device

Firewall Traffic Syslog Event IDs and Event Names

EventID	EventName
108001	Inspect SMTP

EventID	EventName
108002	Inspect SMTP
108003	Inspect ESMTP Dropped
108004	Inspect ESMTP
108005	Inspect ESMTP
108006	Inspect ESMTP Violation
108007	Inspect ESMTP
110002	No Router found
110003	Failed to Find Next hop
209003	Fragment Limit Reach
209004	Fragment invalid Length
209005	Fragment IP discard
302003	H245 Connection Start
302004	H323 Connection start
302009	Restart TCP
302010	Connection USAGE
302012	H225 CALL SIGNAL CONN
302013	Built TCP
302014	Teardown TCP
302015	Built UDP
302016	Teardown UDP
302017	Built GRE
302018	Teardown GRE
302019	H323 Failed
302020	Built ICMP
302021	Teardown ICMP
302022	Built TCP Stub
302023	Teardown TCP Stub
302024	Built UDP Stub

EventID	EventName
302025	Teardown UDP Stub
302026	Built ICMP Stub
302027	Teardown ICMP Stub
302033	Connection H323
302034	H323 Connection Failed
302035	Built SCTP
302036	Teardown SCTP
303002	FTP file download/upload
303003	Inspect FTP Dropped
303004	Inspect FTP Dropped
303005	Inspect FTP reset
313001	ICMP Denied
313004	ICMP Drop
313005	ICMP Error Msg Drop
313008	ICMP ipv6 Denied
324000	GTP Pkt Drop
324001	GTP Pkt Error
324002	Memory Error
324003	GTP Pkt Drop
324004	GTP Version Not Supported
324005	GTP Tunnel Failed
324006	GTP Tunnel Failed
324007	GTP Tunnel Failed
337001	Phone Proxy SRTP Failed
337002	Phone Proxy SRTP Failed
337003	Phone Proxy SRTP Auth Fail
337004	Phone Proxy SRTP Auth Fail
337005	Phone Proxy SRTP no Media Session

EventID	EventName
337006	Phone Proxy TFTP Unable to Create File
337007	Phone Proxy TFTP Unable to Find File
337008	Phone Proxy Call Failed
337009	Phone Proxy Unable to Create Phone Entry
400000	IPS IP options-Bad Option List
400001	IPS IP options-Record Packet Route
400002	IPS IP options-Timestamp
400003	IPS IP options-Security
400004	IPS IP options-Loose Source Route
400005	IPS IP options-SATNET ID
400006	IPS IP options-Strict Source Route
400007	IPS IP Fragment Attack
400008	IPS IP Impossible Packet
400009	IPS IP Fragments Overlap
400010	IPS ICMP Echo Reply
400011	IPS ICMP Host Unreachable
400012	IPS ICMP Source Quench
400013	IPS ICMP Redirect
400014	IPS ICMP Echo Request
400015	IPS ICMP Time Exceeded for a Datagram
400017	IPS ICMP Timestamp Request
400018	IPS ICMP Timestamp Reply
400019	IPS ICMP Information Request
400020	IPS ICMP Information Reply
400021	IPS ICMP Address Mask Request
400022	IPS ICMP Address Mask Reply
400023	IPS Fragmented ICMP Traffic
400024	IPS Large ICMP Traffic

EventID	EventName
400025	IPS Ping of Death Attack
400026	IPS TCP NULL flags
400027	IPS TCP SYN+FIN flags
400028	IPS TCP FIN only flags
400029	IPS FTP Improper Address Specified
400030	IPS FTP Improper Port Specified
400031	IPS UDP Bomb attack
400032	IPS UDP Snork attack
400033	IPS UDP Chargen DoS attack
400034	IPS DNS HINFO Request
400035	IPS DNS Zone Transfer
400036	IPS DNS Zone Transfer from High Port
400037	IPS DNS Request for All Records
400038	IPS RPC Port Registration
400039	IPS RPC Port Unregistration
400040	IPS RPC Dump
400041	IPS Proxied RPC Request
400042	IPS YP server Portmap Request
400043	IPS YP bind Portmap Request
400044	IPS YP password Portmap Request
400045	IPS YP update Portmap Request
400046	IPS YP transfer Portmap Request
400047	IPS Mount Portmap Request
400048	IPS Remote execution Portmap Request
400049	IPS Remote execution Attempt
400050	IPS Statd Buffer Overflow
406001	Inspect FTP Dropped
406002	Inspect FTP Dropped

EventID	EventName
407001	Host Limit Reach
407002	Embryonic limit Reached
407003	Established limit Reached
415001	Inspect Http Header Field Count
415002	Inspect Http Header Field Length
415003	Inspect Http body Length
415004	Inspect Http content-type
415005	Inspect Http URL length
415006	Inspect Http URL Match
415007	Inspect Http Body Match
415008	Inspect Http Header match
415009	Inspect Http Method match
415010	Inspect transfer encode match
415011	Inspect Http Protocol Violation
415012	Inspect Http Content-type
415013	Inspect Http Malformed
415014	Inspect Http Mime-Type
415015	Inspect Http Transfer-encoding
415016	Inspect Http Unanswered
415017	Inspect Http Argument match
415018	Inspect Http Header length
415019	Inspect Http status Matched
415020	Inspect Http non-ASCII
416001	Inspect SNMP dropped
419001	Dropped packet
419002	Duplicate TCP SYN
419003	Packet modified
424001	Denied Packet

EventID	EventName
424002	Dropped Packet
431001	Dropped RTP
431002	Dropped RTCP
500001	Inspect ActiveX
500002	Inspect Java
500003	Inspect TCP Header
500004	Inspect TCP Header
500005	Inspect Connection Terminated
508001	Inspect DCERPC Dropped
508002	Inspect DCERPC Dropped
509001	Prevented No Forward Cmd
607001	Inspect SIP
607002	Inspect SIP
607003	Inspect SIP
608001	Inspect Skinny
608002	Inspect Skinny dropped
608003	Inspect Skinny dropped
608004	Inspect Skinny dropped
608005	Inspect Skinny dropped
609001	Built Local-Host
609002	Teardown Local Host
703001	H225 Unsupported Version
703002	H225 Connection
726001	Inspect Instant Message

Identity Based Firewall Syslog Event IDs and Event Names

EventID	EventName
746001	Import started
746002	Import complete

EventID	EventName
746003	Import failed
746004	Exceed user group limit
746005	AD Agent down
746006	AD Agent out of sync
746007	Netbios response failed
746008	Netbios started
746009	Netbios stopped
746010	Import user failed
746011	Exceed user limit
746012	User IP add
746013	User IP delete
746014	FQDN Obsolete
746015	FQDN resolved
746016	DNS lookup failed
746017	Import user issued
746018	Import user done
746019	Update AD Agent failed

IPSec Syslog Event IDs and Event Names

EventID	EventName
402114	Invalid SPI received
402115	Unexpected protocol received
402116	Packet doesn't match identity
402117	Non-IPSEC packet received
402118	Invalid fragment offset
402119	Anti-Replay check failure
402120	Authentication failure
402121	Packet dropped
426101	cLACP Port Bundle
426102	cLACP Port Standby

EventID	EventName
426103	cLACP Port Moved To Bundle From Standby
426104	cLACP Port Unbundled
602103	Path MTU updated
602104	Path MTU exceeded
602303	New SA created
602304	SA deleted
702305	SA expiration - Sequence rollover
702307	SA expiration - Data rollover

NAT Syslog Event ID and Event Names

EventID	EventName
201002	Max connection Exceeded for host
201003	Embryonic limit exceed
201004	UDP connection limit exceed
201005	FTP connection failed
201006	RCMD connection failed
201008	New connection Disallowed
201009	Connection Limit exceed
201010	Embryonic Connection limit exceeded
201011	Connection Limit exceeded
201012	Per-client embryonic connection limit exceeded
201013	Per-client connection limit exceeded
202001	Global NAT exhausted
202005	Embryonic connection error
202011	Connection limit exceeded
305005	No NAT group found
305006	Translation failed
305007	Connection dropped
305008	NAT allocation issue
305009	NAT Created
305010	NAT teardown
305011	PAT created
305012	PAT teardown

EventID	EventName
305013	Connection denied

SSL VPN Syslog Event IDs and Event Names

EventID	EventName
716001	WebVPN Session Started
716002	WebVPN Session Terminated
716003	WebVPN User URL access
716004	WebVPN User URL access denied
716005	WebVPN ACL error
716006	WebVPN User Disabled
716007	WebVPN Unable to Create
716008	WebVPN Debug
716009	WebVPN ACL error
716010	WebVPN User access network
716011	WebVPN User access
716012	WebVPN User Directory access
716013	WebVPN User file access
716014	WebVPN User file access
716015	WebVPN User file access
716016	WebVPN User file access
716017	WebVPN User file access
716018	WebVPN User file access
716019	WebVPN User file access
716020	WebVPN User file access
716021	WebVPN user access file denied
716022	WebVPN Unable to connect proxy
716023	WebVPN session limit reached
716024	WebVPN User access error
716025	WebVPN User access error
716026	WebVPN User access error
716027	WebVPN User access error
716028	WebVPN User access error
716029	WebVPN User access error

EventID	EventName
716030	WebVPN User access error
716031	WebVPN User access error
716032	WebVPN User access error
716033	WebVPN User access error
716034	WebVPN User access error
716035	WebVPN User access error
716036	WebVPN User login successful
716037	WebVPN User login failed
716038	WebVPN User Authentication Successful
716039	WebVPN User Authentication Rejected
716040	WebVPN User logging denied
716041	WebVPN ACL hit count
716042	WebVPN ACL hit
716043	WebVPN Port forwarding
716044	WebVPN Bad Parameter
716045	WebVPN Invalid Parameter
716046	WebVPN connection terminated
716047	WebVPN ACL usage
716048	WebVPN memory issue
716049	WebVPN Empty SVC ACL
716050	WebVPN ACL error
716051	WebVPN ACL error
716052	WebVPN Session Terminated
716053	WebVPN SSO Server added
716054	WebVPN SSO Server deleted
716055	WebVPN Authentication Successful
716056	WebVPN Authentication Failed
716057	WebVPN Session terminated
716058	WebVPN Session lost
716059	WebVPN Session resumed
716060	WebVPN Session Terminated
722001	WebVPN SVC Connect request error

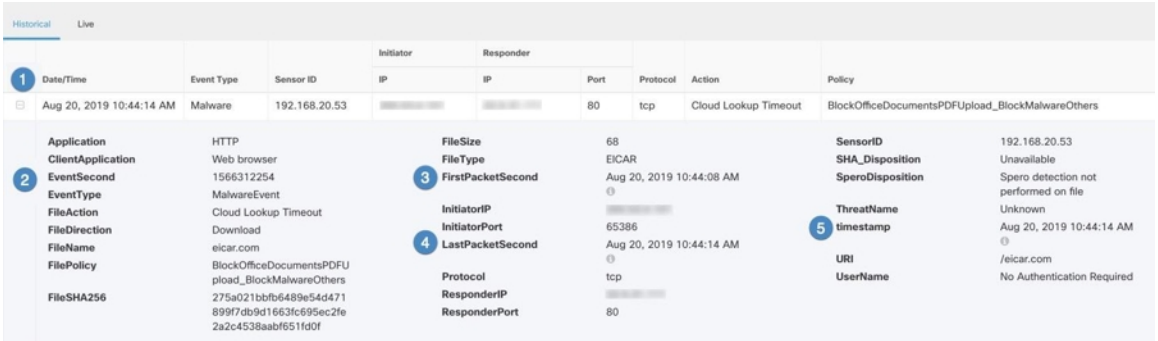
EventID	EventName
722002	WebVPN SVC Connect request error
722003	WebVPN SVC Connect request error
722004	WebVPN SVC Connect request error
722005	WebVPN SVC Connect update issue
722006	WebVPN SVC Invalid address
722007	WebVPN SVC Message
722008	WebVPN SVC Message
722009	WebVPN SVC Message
722010	WebVPN SVC Message
722011	WebVPN SVC Message
722012	WebVPN SVC Message
722013	WebVPN SVC Message
722014	WebVPN SVC Message
722015	WebVPN SVC invalid frame
722016	WebVPN SVC invalid frame
722017	WebVPN SVC invalid frame
722018	WebVPN SVC invalid frame
722019	WebVPN SVC Not Enough Data
722020	WebVPN SVC no address
722021	WebVPN Memory issue
722022	WebVPN SVC connection established
722023	WebVPN SVC connection terminated
722024	WebVPN Compression Enabled
722025	WebVPN Compression Disabled
722026	WebVPN Compression reset
722027	WebVPN Decompression reset
722028	WebVPN Connection Closed
722029	WebVPN SVC Session terminated
722030	WebVPN SVC Session terminated
722031	WebVPN SVC Session terminated
722032	WebVPN SVC connection Replacement
722033	WebVPN SVC Connection established

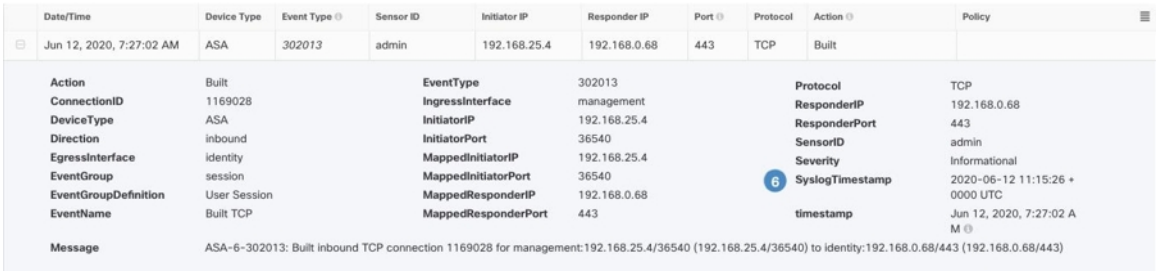
EventID	EventName
722034	WebVPN SVC New connection
722035	WebVPN Received Large packet
722036	WebVPN transmitting Large packet
722037	WebVPN SVC connection closed
722038	WebVPN SVC session terminated
722039	WebVPN SVC invalid ACL
722040	WebVPN SVC invalid ACL
722041	WebVPN SVC IPv6 not available
722042	WebVPN invalid protocol
722043	WebVPN DTLS disabled
722044	WebVPN unable to request address
722045	WebVPN Connection terminated
722046	WebVPN Session terminated
722047	WebVPN Tunnel terminated
722048	WebVPN Tunnel terminated
722049	WebVPN Session terminated
722050	WebVPN Session terminated
722051	WebVPN address assigned
722053	WebVPN Unknown client
723001	WebVPN Citrix connection Up
723002	WebVPN Citrix connection Down
723003	WebVPN Citrix no memory issue
723004	WebVPN Citrix bad flow control
723005	WebVPN Citrix no channel
723006	WebVPN Citrix SOCKS error
723007	WebVPN Citrix connection list broken
723008	WebVPN Citrix invalid SOCKS
723009	WebVPN Citrix invalid connection
723010	WebVPN Citrix invalid connection
723011	WebVPN citrix Bad SOCKS
723012	WebVPN Citrix Bad SOCKS
723013	WebVPN Citrix invalid connection

EventID	EventName
723014	WebVPN Citrix connected to Server
724001	WebVPN Session not allowed
724002	WebVPN Session terminated
724003	WebVPN CSD
724004	WebVPN CSD
725001	SSL handshake Started
725002	SSL Handshake completed
725003	SSL Client session resume
725004	SSL Client request Authentication
725005	SSL Server request authentication
725006	SSL Handshake failed
725007	SSL Session terminated
725008	SSL Client Cipher
725009	SSL Server Cipher
725010	SSL Cipher
725011	SSL Device choose Cipher
725012	SSL Device choose Cipher
725013	SSL Server choose cipher
725014	SSL LIB error
725015	SSL client certificate failed

Time attributes in a syslog event

Understanding the purposes of the different time-stamps in the Event Logging page will help you filter and find the events that interest you.

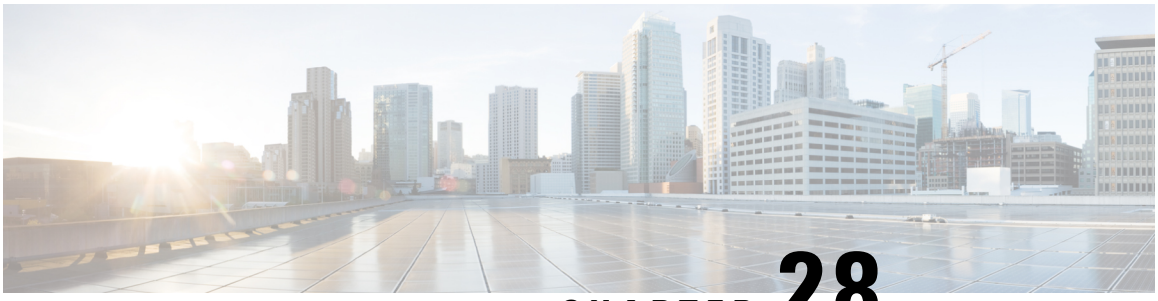






Number	Label	Description
1	Date/Time	The time the Secure Event Connector (SEC) processed the event. This may not be the same as the time the firewall inspected that traffic. Same value as timestamp.
2	EventSecond	Equals with LastPacketSecond.
3	FirstPacketSecond	The time at which the connection opened. The firewall inspects the packet at this time. The value of the FirstPacketSecond is calculated by subtracting the ConnectionDuration from the LastPacketSecond. For connection events logged at the beginning of the connection, the value of FirstPacketSecond, LastPacketSecond, and EventSecond will all be the same.
4	LastPacketSecond	The time at which the connection closed. For connection events logged at the end of the connection, LastPacketSecond and EventSecond will be equal.

Number	Label	Description
5	timestamp	The time the Secure Event Connector (SEC) processed the event. This may not be the same as the time the firewall inspected that traffic. Same value as Date/Time.
6	Syslog TimeStamp	Represents the syslog originated time if 'logging timestamp' is used. If the syslog does not have this info, the time the SEC received the event is reflected.
7	NetflowTimeStamp	The time at which the ASA finished gathering enough flow records/events to fill a NetFlow packet to then send them off to a flow collector.



CHAPTER 28

FTD Dashboard

This chapter provides information about the FTD dashboard and describes the predefined widgets that offer an overview of your system.

- About the FTD Dashboard, on page 795
- View the FTD Dashboard, on page 796
- FTD Dashboard Widgets, on page 797
- Modify Time Settings for the FTD Dashboard, on page 800

About the FTD Dashboard

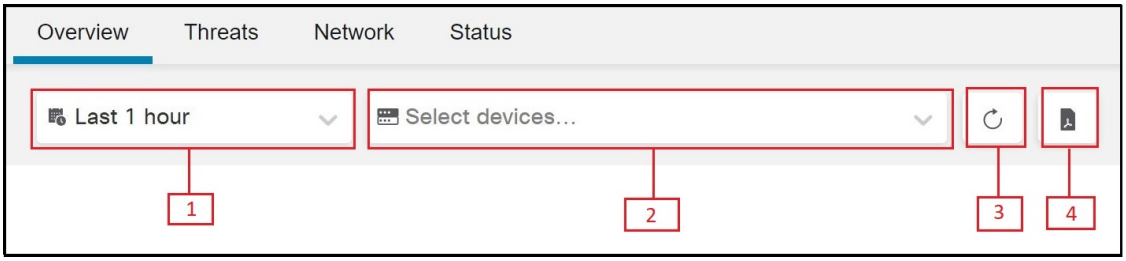
The FTD dashboard provides you an at-a-glance view of the status, including events data collected and generated by all Security Cloud Control-managed Firewall Threat Defense devices.

You can use this dashboard to view collective information that is related to the device status and the overall health of the devices in your deployment. The information that the FTD dashboard provides depends on how you license, configure, and deploy the devices in your system. Although, the FTD dashboard displays data for all Security Cloud Control-managed Firewall Threat Defense devices, you can choose to filter device-based data. You can also choose the time range to display for specific time range.

This dashboard uses tabs to display predefined widgets: small, self-contained components that provide insights into different aspects of the system. For example, the Network Activity widget shows you event graphs that display information about all connection, malware, and intrusion events. The widgets in the dashboard are predefined and cannot be customized. This dashboard is visible to all Security Cloud Control users who have access to a Security Cloud Control tenant.

- The dashboard does not displays any event statistics for historic events.
- Since the aggregation service batch processes the events to aggregate every five minutes, you can expect a five-minute latency between the time the events are aggregated to the time the statistics are displayed.

Figure 23: FTD Dashboard



Number	Description
1	Allows you to change the time range to reflect a period as short as the last hour or as long as the last year. When you change the time range, the widgets automatically update the events data to reflect the new time range.
2	Allows you to filter the events data based on selected devices. If no devices are selected, the widgets display all available events data.
3	Reinitiates the events data query
4	Displays the events data in a PDF output format. You can choose to download or save a copy of this PDF on your local machine.

View the FTD Dashboard

From the Security Cloud Control menu, choose **Analytics** > **FTD DashboardInsights & Reports** > **Firewall Threat Defense** > **Dashboard** to view the **FTD Dashboard**.

By default, the home page for your tenant displays the **Overview** tab.

The dashboard includes widgets that are listed under each tab: Threat, Network, Applications, and Status tab.

The following table lists the widgets available under each tab:

Name of the Tab	Available Widgets
Overview	All available widgets
Threat	• Top Intrusion Rules • Top Intrusion Attackers • Top Intrusion Targets • Top Malware Signatures • Top Malware Senders • Top Malware Receivers • Malware Events by Disposition

Name of the Tab	Available Widgets
Network	• Network Activity • Event Activity • Access Control Actions • Top Access Control Policies • Top Access Control Rules • Top Devices • Top Users • Top Users by Blocked Connections
Status	• Top Devices with Health Alerts • Top Loaded Devices
Applications	• Top Web Applications • Top Client Applications • Blocked Web Applications

FTD Dashboard Widgets

The FTD dashboard displays predefined widgets that can provide you with at-a-glance views of the current system status. These views include:

- Data about the events collected and generated by Firewall Threat Defense devices managed FMC.
- Information about the status and the overall health of the devices in your deployment.

Top Intrusion Rules Widget

The **Top Intrusion Rules** widget displays counts of the intrusion events that have occurred over the specified time range and are organized by priority. These counts include statistics on intrusion events with dropped packets and different impacts. The generated list is scrollable.

Top Intrusion Attackers Widget

The **Top Intrusion Attackers** widget displays counts of intrusion events for the top attacking host IP addresses (causing those events) on your monitored network.

Top Intrusion Targets Widget

The **Top Intrusion Targets** widget displays counts of intrusion events for the top target host IP addresses (targeted in the connections causing those events) on your monitored network.

Top Malware Signatures Widget

The **Top Malware Signatures** widget displays counts of the top malware signatures detected in the network traffic for top file-sending host IP addresses.

Top Malware Senders Widget

The **Top Malware Senders** widget displays counts of the top malware threats that are detected in the network traffic for top file-sending host IP addresses.

Top Malware Receivers Widget

The **Top Malware Receivers** widget displays counts of the top malware threats that are detected in the network traffic for all top file-receiving host IP addresses.

Malware Events by Disposition Widget

The **Malware Events by Disposition** widget displays counts of all disposition of malware events that are generated when the managed device detects a file containing malware.

Network Activity Widget

The **Network Activity** widget displays all ingress and egress data rate that is based on information from the connection events.

Event Activity Widget

The **Event Activity** widget displays counts of events that have occurred in the last hour and the total number of each event type that is available in the database.

Access Control Actions Widget

The **Access Control Actions** widget displays counts of events that are logged based on the allowed or blocked access control actions for each event. If you hover on the pie chart, you can view the percentage of the allowed and blocked actions.

Top Access Control Policies Widget

The **Top Access Control Policies** widget displays counts of top access control policies generating events.

Top Access Control Rules Widget

The **Top Access Control Rules** widget displays the top five counts of the access control rules that are used for each event. These counts can be sorted by bytes or events.

Top Devices Widget

The **Top Devices** widget displays counts of events per devices. These count can be sorted by bytes or events.

Top Users Widget

The **Top Users** widget displays a list of users on your monitored network that are associated with the highest intrusion event counts. It draws data primarily from the intrusion detection (IDS) User Statistics and Intrusion Events tables. It displays authoritative user data.

Top Users by Blocked Connections Widget

The **Top Users by Blocked Connections** widget displays users who have the highest number of blocked connection events associated with them in your monitored network.

Top Devices with Health Alerts Widget

The **Top Devices with Health Alerts** widget displays the current compiled health status for Security Cloud Control-managed Firewall Threat Defense devices.

Top Loaded Devices Widget

The **Top Loaded Devices** widget displays a list of Secure Firewall Threat Defense devices along with the CPU usage information.

Top Web Applications Widget

The **Top Web Applications** widget displays the web applications that are associated with the highest number of connection events in your monitored network. You can sort this list based on bytes or event count.

Top Client Applications Widget

The **Top Client Applications** widget displays the most used client applications in your monitored network. You can sort this list based on bytes or event count.

Top Blocked Web Applications Widget

The **Top Web Applications** widget displays the top web applications that are associated with blocked connection events and the count of blocked connection events in your monitored network.

Modify Time Settings for the FTD Dashboard

You can change the time range to reflect a period as short as the last hour (the default) or as long as the last year. When you change the time range, the widgets that can be constrained by time automatically update to reflect the new time range.

The maximum number of data points in any graph is 300, and the time setting determines how much time is summarized within each data point. Following is the number of data points, and the time span covered, in the FTD dashboard for each time range:

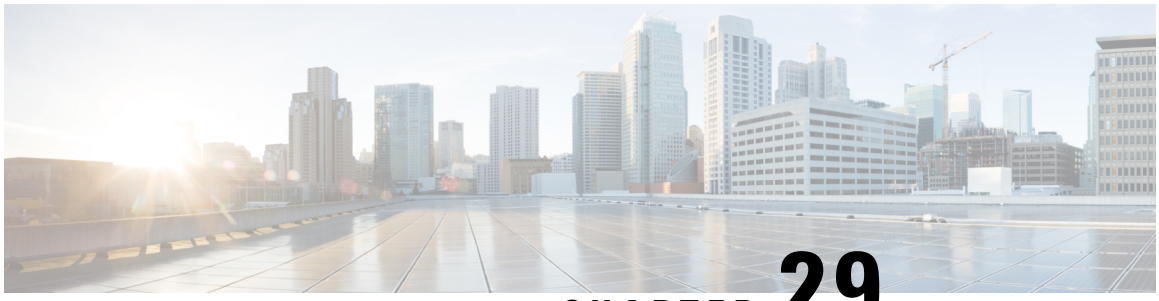
- 1 hour = 12 data points, 5 minutes each
- 6 hours = 72 data points, 5 minutes each
- 1 day = 288 data points, 5 minutes each
- 1 week = 300 data points, 33.6 minutes each
- 2 weeks = 300 data points, 67.2 minutes each
- 30 days = 300 data points, 144 minutes each
- 90 days = 300 data points, 432 minutes each
- 180 days = 300 data points, 864 minutes each
- 1 year = 300 data points, 1752 minutes each



PART VIII

Appendix

- Troubleshooting, on page 803
- FAQ and support, on page 849
- Security and Internet Access, on page 865
- Terraform, on page 867
- Appendix, on page 869



CHAPTER 29

Troubleshooting

This chapter details how to troubleshoot errors that may occur when working with various components in Security Cloud Control Firewall Management.

- Troubleshoot a Secure Firewall ASA device, on page 803
- Troubleshoot a Secure Device Connector, on page 813
- Troubleshoot a Secure Event Connector, on page 822
- Troubleshoot Security Cloud Control, on page 829
- Device connectivity states, on page 833

Troubleshoot a Secure Firewall ASA device

ASA Fails to Reconnect to Security Cloud Control After Reboot

If Security Cloud Control and your ASA do not connect after an ASA reboot, it may be because the ASA has fallen back to using an OpenSSL cipher suite that is not supported by Security Cloud Control's Secure Device Connector (SDC). This troubleshooting topic tests for that case and provides remediation steps.

Symptoms

- ASA reboots and Security Cloud Control and the ASA fail to reconnect. Security Cloud Control displays the message, "Failed to reconnect."
- When attempting to onboard an ASA, Security Cloud Control displays the message: *Certificate could not be retrieved for <ASA_IP_Address>*.

Cannot onboard ASA due to certificate error

Environment: ASA is configured with client-side certificate authentication.

Solution: Disable client-side certificate authentication.

Details: ASAs support credential-based authentication as well as client-side certificate authentication. Security Cloud Control cannot connect to ASAs that use client-side certificate authentication. Before onboarding your ASA to Security Cloud Control, make sure it does not have client-certificate authentication enabled by using this procedure:

Procedure

Step 1 Open a terminal window and connect to the ASA using SSH.

Step 2 Enter global configuration mode.

Step 3 At the hostname (config)# prompt, enter this command:

```
no ssl certificate-authentication interface interface-name port 443
```

The interface name is the name of the interface Security Cloud Control connects to.

Determine the OpenSSL Cipher Suite Used by your ASA

Use this procedure to identify the OpenSSL cipher suite being used by your ASA. If the cipher suite named in the command output is not in the list of supported cipher suites, the SDC doesn't support that cipher suite and you will need to update the cipher suites on your ASA.

Procedure

Step 1 Open a console window on a computer that can reach the SDC.

Step 2 Connect to your SDC using SSH. You can log in as a regular user such as Security Cloud Control or SDC or some other user you created. You don't need to be logged in as root.

Tip
To find your SDC IP address:

a. Open Security Cloud Control.

b. From the user menu, select Secure Device Connectors.

c. Click the SDC displayed in the table. The IP address of the SDC is displayed in the details pane for the device.

Step 3 At the command prompt enter: **openssl s_client -showcerts -connect** *ASA_IP_Address*:**443**

Step 4 Look for these lines in the command output.

```
New, TLSV1/SSLv3, Cipher is DES-CB3-SHA
or
SSL-Session:
            Protocol: TLSv1.2
            Cipher: DES-CB3-SHA
```

In this example, the cipher suite being used by the ASA is `DES-CB3-SHA`.

Cipher Suites Supported by Security Cloud Control's Secure Device Connector

Security Cloud Control's Secure Device Connector uses node.js which only accepts the latest and most secure ciphers. As a result, Security Cloud Control's SDC only supports this list of ciphers:

- ECDHE-RSA-AES128-GCM-SHA256
- ECDHE-ECDSA-AES128-GCM-SHA256
- ECDHE-RSA-AES256-GCM-SHA384
- ECDHE-ECDSA-AES256-GCM-SHA384
- DHE-RSA-AES128-GCM-SHA256
- ECDHE-RSA-AES128-SHA256
- DHE-RSA-AES128-SHA256
- ECDHE-RSA-AES256-SHA384
- DHE-RSA-AES256-SHA384
- ECDHE-RSA-AES256-SHA256
- DHE-RSA-AES256-SHA256

If the cipher suite you use on your ASA is not in this list, SDC does not support it and you will need to update the cipher suite on your ASA.

Updating your ASA's Cipher Suite

To update the TLS cipher suites on an ASA:

Procedure

Step 1 Connect to the ASA using SSH.

Step 2 Once connected to the ASA, elevate your privileges to global configuration mode. Your prompt should look like this: asaname(config)#

Step 3 At the prompt, enter a command similar to this:

```
ssl cipher tlsv1.2 custom "ECDHE-RSA-AES128-GCM-SHA256 ECDHE-ECDSA-AES128-GCM-SHA256
ECDHE-RSA-AES256-GCM-SHA384 ECDHE-ECDSA-AES256-GCM-SHA384 DHE-RSA-AES128-GCM-SHA256
ECDHE-RSA-AES128-SHA256 DHE-RSA-AES128-SHA256 ECDHE-RSA-AES256-SHA384 DHE-RSA-AES256-SHA384
 ECDHE-RSA-AES256-SHA256 DHE-RSA-AES256-SHA256"
```

Note
The cipher suites this command configures your ASA to support are contained between quotes and after the word custom. In this command, the cipher suites specified begin with `ECDHE-RSA-AES128-GCM-SHA256` and end with `DHE-RSA-AES256-SHA256`. When you enter the command on your ASA, remove any cipher suites you know your ASA will not support.

Step 4 After you submit the command, enter write memory at the prompt to save the local configuration. For example:

```
asaname(config)#write memory
```

Troubleshoot ASA using CLI commands

This section discusses some of the important commands you may want to use to troubleshoot the ASA and test basic connectivity. See CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide to learn about other troubleshooting scenarios and CLI commands. In the 'System Administration' section, navigate to the 'Testing and Troubleshooting' chapter.

You can use the Security Cloud Control CLI interface available for each ASA device to execute these commands.

See ASA command line interface, on page 359 to learn about how to use the CLI interface in Security Cloud Control.

NAT Policy Settings

Some of the important commands to determine the NAT settings are as follows:

- To determine NAT policy statistics, use **show nat**.
- To determine the NAT pools, including the addresses and ports allocated, and how many times they were allocated, use **show nat pool**.

For more commands related to NAT, see CLI Book 2: Cisco ASA Series Firewall CLI Configuration Guide, and navigate to the 'Network Address Translation (NAT)' chapter.

Test Basic Connectivity: Pinging Addresses

You can ping the ASA device using the **ping <IP address>** command using the ASA CLI interface. To learn about

Display the Routing Table

Use the **show route** command to view the entries in the routing table.

ciscoasa# show route

Example output for a routing table of an ASA:

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, + - replicated route

SI - Static InterVRF

Gateway of last resort is 192.168.0.254 to network 0.0.0.0

S* 0.0.0.0 0.0.0.0 [1/0] via 192.168.0.254, management

C 10.0.0.0 255.0.0.0 is directly connected, Outside

L 10.10.10.1 255.255.255.255 is directly connected, Outside
```

```
C 192.168.0.0 255.255.255.0 is directly connected, management

L 192.168.0.118 255.255.255.255 is directly connected, management
```

Monitor Switch Ports

- **show interface**

  Displays interface statistics.

- **show interface ip brief**

  Displays interface IP addresses and status.

- **show arp**

Shows dynamic, static, and proxy ARP entries. Dynamic ARP entries include the age of the ARP entry in seconds.

Example output of ARP entries:

```
management 10.10.32.129 0050.568a.977b 0

management 10.10.32.136 0050.568a.5387 21

LANFAIL 20.20.21.1 0050.568a.4d70 96

outsi 10.10.16.6 0050.568a.e6d3 3881

outsi 10.10.16.1 0050.568a.977b 5551
```

Troubleshoot ASA Remote Access VPN

This section discusses some of the troubleshooting issues that may occur when configuring remote access VPN on an ASA device.

Missing Information on the RA VPN Monitoring Page

This issue may occur if the outside interface is not enabled for Webvpn.

Resolution:

1. In the navigation pane, click **Inventory**.
2. Click the **Devices** tab and then click the **ASA** tab.
3. In the left pane, click **Security Devices** and then click the **ASA** tab.
4. Select the RA VPN headend ASA device that is having issues.
5. In the **Management** pane on the right, click **Configuration**.
6. Click **Edit** and search for ‘webvpn’.
7. Press **Enter** and add `enable` *interface_name*. Here, the interface_name is the name of the outside interface to which users connect when making the remote access VPN connection. Although this is normally the outside (internet-facing) interface, choose whichever interface is between the device and the end-users you are supporting with this connection profile.

   For example:

```
webvpn

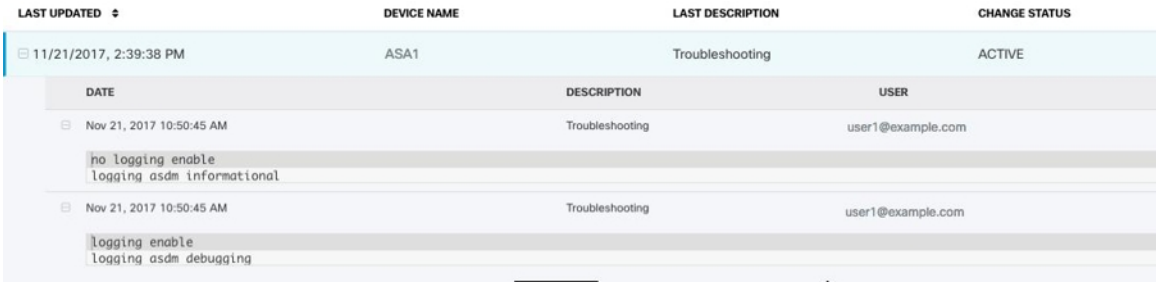
enable outside
```

8. Click **Save**.
9. Preview and deploy the configuration to the device.

ASA Real-time Logging

Use real-time logging to display the last 20 seconds of logged data or the last 10 KB of logged data, whichever limit is reached first. When Security Cloud Control retrieves the real-time data, it reviews the existing logging configuration on your ASDM, changes it to request debugging-level data, and then returns the logging configuration to your configuration. The logging Security Cloud Control displays reflects any logging filters you may have set in ASDM.

You can see the commands that Security Cloud Control sends to perform logging by reviewing the change log. Below is an example of a change log entry. The first entry (on the bottom) indicates that Security Cloud Control "turned on" logging with the logging enable command and changed the ASDM logging level to debugging. The second entry (on the top) shows that the logging configuration was returned to its previous state. Logging was "turned off" with the no logging enable command and the ASDM logging level was returned to informational.



View ASA Real-time Logs

Procedure

Step 1 On the **Inventory** page, click the **Devices** tab.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the appropriate device type tab and select the device for which you want to view real-time data.

Step 4 Click **Troubleshoot** Troubleshoot.

Step 5 (Optional) Before clicking View Real-time Log, you can define a filter in the left pane to refine the results of your logging search.

Step 6 Click **View Real-time Log**. Security Cloud Control retrieves the real-time logging data based on your filterin criteria and displays it.

Step 7 To see an additional 20 seconds of logged data or the last 10 KB of logged data. click **View Real-Time Log** again.

ASA Packet Tracer

Packet tracer allows you to send a synthetic packet into the network and evaluate how the existing routing configuration, NAT rules, and policy configurations, affect that packet. Use this tool to troubleshoot these kinds of issues:

- Users report that they cannot reach resources that they should be able to.
- Users report that they can reach resources they should not be able to.
- Test a policy to determine if it works as you expect.

Packet tracer can be used on a live, online, ASA device either physical or virtual. Packet Tracer does not work on ASA model devices. Packet tracer evaluates packets based on the saved configuration on the ASA. Staged changes on Security Cloud Control are not evaluated by packet tracer.

We consider it a best-practice to run packet tracer on an ASA that is in the synced state. Though packet tracer will run if the device is not synced, you could encounter some unexpected results. For example, if you deleted a rule in the staged configuration on Security Cloud Control, and this same rule was triggered on the ASA during packet tracing, Security Cloud Control won't be able to show you the result of the packet's interaction with that rule.

Troubleshooting with ASA Packet Tracer

As packet tracer sends the packet through the routing configuration, NAT rules, and security policies of your ASA, it displays the packet's status at each step. If the packet is allowed by the policy it receives a green checkmark. If a packet is denied and dropped, Security Cloud Control displays a red X.

Packet tracer also displays a real time log of the result of the packet trace. In the example below, you can see where a rule denied a tcp packet.



Troubleshoot an ASA Device Security Policy

Procedure

Step 1 From the **Inventory** page, select your ASA, and click **Troubleshoot** Troubleshoot in the Actions pane.

Step 2 In the left pane, click **Security Devices**.

Step 3 Select your ASA and view troubleshooting details in the **Troubleshooting** pane.

Step 4 In the pane, select the interface and packet type you want to send virtually through your ASA.

Step 5 (Optional) If you want to trace a packet where the security group tag value is embedded in the Layer 2 CMD header (Trustsec), check SGT number and enter the security group tag number, 0-65535.

Step 6 Specify the source and destination. You can specify IPv4 or IPv6 addresses, fully-qualified domain names (FQDN), or security group names or tags if you use Cisco Trustsec. For the source address, you can also specify a username in the format Domain\username.

Step 7 Specify other protocol characteristics:

- ICMP-Enter the ICMP type, ICMP code (0-255), and optionally, the ICMP identifier.
- TCP/UDP/SCTP-Enter the source and destination ports by selecting them from the list or entering a value in the port combo box.
- IP-Enter the protocol number, 0-255.

Step 8 Click **Run Packet Tracer**.

Step 9 Continue with Analyze Packet Tracer Results.

Troubleshoot an Access Rule

Procedure

Step 1 Select **Policies** > **Network Policies**.

Step 2 In the left pane, click **Policies** > **ASA** > **Access Policies**.

Step 3 Select a policy that is associated with your ASA.

Step 4 Select a rule in the network policy to troubleshoot and click **Troubleshoot** Troubleshoot in the details pane. Notice that in the values panel of the troubleshoot page, many of the fields are pre-populated with the attributes of the rule you chose.

Step 5 Enter information in the remaining required fields. Once you have completed all the required fields the Run Packet Tracer button becomes active.

Step 6 Click **Run Packet Tracer.**

Step 7 Continue with Analyze Packet Tracer Results.

Troubleshoot a NAT Rule

Procedure

Step 1 From the **Inventory** page, select your ASA, and click **View NAT Rules** View NAT Rules in the Action pane.

Step 2 In the left pane, click **Security Devices** and then click the **ASA** tab.

Step 3 Select your ASA, and click **View NAT Rules** View NAT Rules in the Action pane.

Step 4 Select the rule from the NAT Rules table that you want to troubleshoot and click **Troubleshoot** Troubleshoot in the details pane. Notice that in the values panel of the Troubleshoot page, many of the fields are pre-populated with the attributes of the rule you chose.

Step 5 Enter information in the remaining required fields. Once you have completed all the required fields the Run Packet Tracer becomes active.

Step 6 Click **Run Packet Tracer.**

Step 7 Continue with Analyze Packet Tracer Results.

Troubleshoot a Twice NAT Rule

Procedure

Step 1 From the **Inventory** page, select your ASA, and click **View NAT Rules** View NAT Rules in the Action pane.

Step 2 In left pane, click **Security Devices**.

Step 3 Click the **ASA** tab, select your ASA, and click **View NAT Rules** View NAT Rules in the Action pane.

Step 4 Select the rule from the NAT Rules table that you want to troubleshoot and click **Troubleshoot** Troubleshoot in the details pane. For a bi-directional Twice NAT rule, this opens a dropdown where you choose to troubleshoot the source packet translation or the destination packet translation.

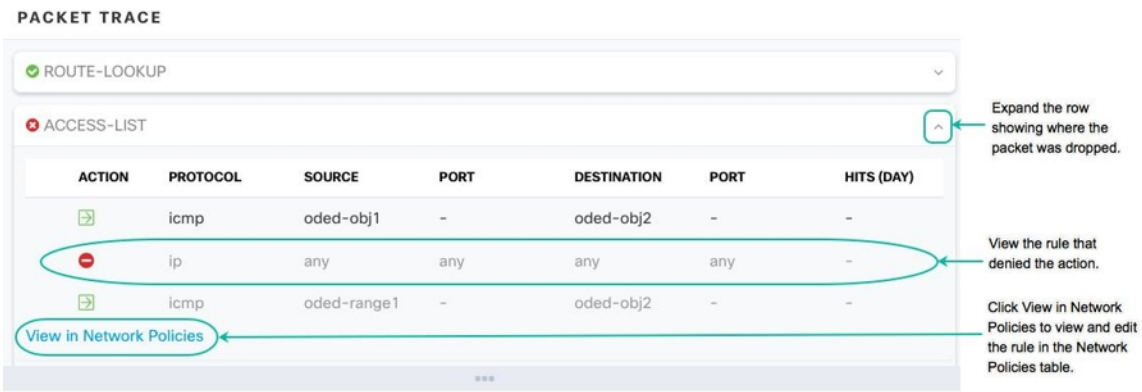
Step 5 Enter information in the remaining required fields. Once you have completed all the required fields the Run Packet Tracer becomes active.

Step 6 Click **Run Packet Tracer**.

Analyze Packet Tracer Results

Whether the packet is dropped or allowed, you can learn why by expanding a row in the packet trace table and reading the rule or logging information related to that action. In the example below, packet tracer identified an access list policy that included a rule to deny an IP packet coming from any source and going to any destination. If this is not the action you want, you can click the **View in Network Policies** link and edit that rule immediately. After you edit the rule, be sure to deploy that configuration change to the ASA and then re-run packet tracer to ensure that you get the access results you expect.

Along with the packet tracer results, Security Cloud Control displays the real-time logs from the ASA.



Confirming ASA Running Configuration Size

To confirm the size of your running configuration file, follow this procedure:

Procedure

Step 1 Access the ASA's command line interface in one of these ways:

- Open a terminal window and log into your ASA using SSH. Elevate your privilege to "privileged EXEC" mode so you see the prompt with `hostname#` .
- If you managed to get your ASA onboarded, open the **Security Devices** page, select the device you want to connect to, and click **>_ Command Line Interface** button in the Device Actions pane.

Step 2 At the prompt type `copy running-config flash`

Step 3 When prompted for the Source filename, don't type anything and press <Enter>

Step 4 When prompted for the destination filename, enter a name for the output file. After ASA copies the running configuration the file you specified, it returns you to the privileged EXEC prompt.

Step 5 At the prompt, type `show flash`

Step 6 Look in the length column. If your file is over 4718592 bytes, it is larger than 4.5 MB.

Here is a sample set of commands and output:

```
asa1# copy running-config flash
Source filename [running-config]?
Destination filename [running-config]? running-config-output
Cryptochecksum: 725f4c1c 4adfb8a9 8b3e7a6d 49e3420d
23648 bytes copied in 1.380 secs (23648 bytes/sec)
asa1# show flash
--#-- --length-- -----date/time------ path
 107 110325428 Feb 28 2019 15:41:42 asdm-8826067.bin
 122 5018592 Apr 30 2019 21:00:59 running-config-output
 111 102647808 Mar 12 2019 14:26:10 asa9-12-1-smp-k8.bin
```

Large ASA Running Configuration Files

Behavior in Security Cloud Control

You may see behavior such as the ASA failing to onboard, Security Cloud Control not displaying all of the configuration defined in the ASA's running configuration file, or Security Cloud Control failing to write to the change log.

Possible Cause

The running configuration file of your ASA may be "too large" for Security Cloud Control.

When you an onboard an ASA to Security Cloud Control, Security Cloud Control stores a copy of the ASA's running configuration file in its database. Generally, if that running configuration file is too large (4.5 MB or larger), or it contains too many lines (approximately 22,000 lines), or there are too many access-list entries for a single access group, Security Cloud Control will not be able to predictably manage that device.

To confirm the size of your running configuration file, see Confirming ASA Running Configuration Size.

Workaround or Solution

Contact your Cisco account team for help safely reducing the size of your configuration file without disrupting your security policies.

Troubleshoot a Secure Device Connector

Use these topics to troubleshoot an on-premises Secure Device Connector (SDC).

If none of these scenarios match yours, open a case with Cisco Technical Assistance Center.

SDC is Unreachable

An SDC is in the state "Unreachable" if it has failed to respond to two heartbeat requests from Security Cloud Control in a row. If your SDC is unreachable, your tenant will not be able to communicate with any of the devices you have onboarded.

Security Cloud Control indicates that an SDC is unreachable in these ways:

- You see the message, “Some Secure Device Connectors (SDC) are unreachable. You will not be able to communicate with devices associated with these SDCs.” on the Security Cloud Control home page.
- The SDC's status in the Services page is "Unreachable."

Frist, attempt to reconnect the SDC to your tenant to resolve this issue:

1. Check that the SDC virtual machine is running and can reach a Security Cloud Control IP address in your region.
2. Attempt to reconnect Security Cloud Control and the SDC by requesting a heartbeat manually. If the SDC responds to a heartbeat request, it will return to "Active" status. To request a heartbeat manually:
   a. In the left pane, choose **Administration** > **Integrations** > **Secure Connectors**.
   b. Click the SDC that is unreachable.
   c. In the Actions pane, click **Request Heartbeat**.
   d. Click **Reconnect**.
3. If the SDC does not return to the Active status after manually attempting to reconnect it to your tenant, follow the instructions in SDC Status not Active on Security Cloud Control After Deployment, on page 813.

   .

SDC Status not Active on Security Cloud Control After Deployment

If Security Cloud Control does not indicate that your SDC is active in about 10 minutes after deployment, connect to the SDC VM using SSH using the `Security Cloud Control` user and password you created when you deployed the SDC.

Procedure

Step 1 In Security Cloud Control, click on the SDC that isn't showing as active, and click **Request Heartbeat**.

Step 2 Ensure that the container is running using the command:

```
docker ps
```

Step 3 View the SDC logs and check for errors using the command:

```
sdc show logs
```

Step 4 Restart the container using the command:

```
sdc restart
```

Changed IP Address of the SDC is not Reflected in Security Cloud Control

To view the updated IP address of an SDC, request a heartbeat using the steps provided earlier, and then refresh your browser.

Request a Heartbeat

In Security Cloud Control, click on the SDC that isn't showing as active, and, in the sidebar, click **Request Heartbeat**.

1. Make sure the container is running using the command: `docker ps`
2. View the SDC logs and check for errors using the command `sdc show logs`
3. Restart the container using the command `sdc restart`

Troubleshoot Device Connectivity with the SDC

Use this tool to test connectivity from Security Cloud Control, through the Secure Device Connector (SDC) to your device. You may want to test this connectivity if your device fails to onboard or if you want to determine, before on-boarding, if Security Cloud Control can reach your device.

Procedure

Step 1 In the left pane, choose **Tools & Services** > **Secure Connectors**.

Step 2 In the left pane, click **Administration** > **Integrations** > **Firewall Management Center**, and click the **Secure Connectors** tab.

Step 3 Select the SDC.

Step 4 In the **Troubleshooting** pane on the right, click **Device Connectivity**.

Step 5 Enter a valid IP address or FQDN and port number of the device you are attempting to troubleshoot, or attempting to connect to, and click **Go**. Security Cloud Control performs the following verifications:

a) **DNS Resolution** - If you provide a FQDN instead of an IP address, this verifies the SDC can resolve the domain name and acquires the IP address.
b) **Connection Test** - Verifies the device is reachable.
c) **TLS Support** - Detects the TLS versions and ciphers that both the device and the SDC support.
   - **Unsupported Cipher** - If there are no TLS version that are supported by both the device and the SDC, Security Cloud Control also tests for TLS versions and ciphers that are supported by the device, but not the SDC.

d) SSL Certificate - The troubleshoot provides certificate information.

Step 6 If you continue to have issues onboarding or connecting to the device, contact Security Cloud Control support.

Intermittent or No Connectivity with SDC

The Secure Device Connector (SDC) has been installed on CentOS 7 virtual machines up to now. However, as CentOS has reached its end-of-life and is no longer supported by Firewall in Security Cloud Control, we recommend migrating all SDCs from CentOS 7 to an Ubuntu virtual machine.

For more information, see Migrate an On-Premises Secure Device Connector and Secure Event Connector from a CentOS 7 Virtual Machine to an Ubuntu Virtual Machine.

This procedure applies only to an on-premise SDC and if you are still using CentOS.

Symptom: Intermittent or no connectivity with SDC.

Diagnosis: This problem may occur if the disk space is almost full (above 80%).

Perform the following steps to check the disk space usage.

1. Open the console for your Secure Device Connector (SDC) VM.
2. Log in with the username **cdo**.
3. Enter the password created during the initial login.
4. First, check the amount of free disk space by typing **`df -h`** to confirm that there is no free disk space available.

   You can confirm that the disk space was consumed by the Docker. The normal disk usage is expected to be under 2 Gigabytes.
5. To see the disk usage of the **Docker** folder,

   execute **`sudo du -h /var/lib/docker | sort -h`**.

   You can see the disk space usage of the **Docker** folder.

Procedure

If the disk space usage of the Docker folder is almost full, define the following in the docker config file:

- Max-size: To force a log rotation once the current file reaches the maximum size.
- Max-file: To delete excess rotated log files when the maximum limit it reached.

Perform the following:

1. Execute **sudo vi /etc/docker/daemon.json**.
2. Insert the following lines to the file.

```
{
"log-driver": "json-file",
"log-opts": {"max-size": "100m", "max-file": "5" }
}
```

3. Press **ESC** and then type **:wq!** to write the changes and close the file.

Note You can execute **sudo cat /etc/docker/daemon.json** to verify the changes made to the file.

4. Execute **sudo systemctl restart docker** to restart the docker file.

   It will take a few minutes for the changes to take effect. You can execute **sudo du -h /var/lib/docker | sort -h** to see the updated disk usage of the docker folder.
5. Execute **df -h** to verify that the free disk size has increased.
6. Before your SDC status can change from Unreachable to Active, you must go to the Secure Connectors tab in the **Services** page from Security Cloud Control and click **Request Reconnect** from the Actions menu.
7. Before your SDC status can change from Unreachable to Active, you must go to the **Secure Connectors** tab which you can navigate to from **Administration** > **Integrations** > **Firewall Management Center** and click **Request Reconnect** from the Actions menu.

Container Privilege Escalation Vulnerability Affecting Secure Device Connector: cisco-sa-20190215-runc

The Cisco Product Security Incident Response Team (PSIRT) published the security advisory **cisco-sa-20190215-runc** which describes a high-severity vulnerability in Docker. Read the entire PSIRT team advisory for a full explanation of the vulnerability.

This vulnerability impacts all Security Cloud Control customers:

- Customers using Security Cloud Control's cloud-deployed Secure Device Connector (SDC) do not need to do anything as the remediation steps have already been performed by the Security Cloud Control Operations Team.
- Customers using an SDC deployed on-premise need to upgrade their SDC host to use the latest Docker version. They can do so by using the following instructions:
  - Updating a Security Cloud Control-Standard SDC Host, on page 817
  - Updating a Custom SDC Host, on page 817
  - Bug Tracking, on page 818

Updating a Security Cloud Control-Standard SDC Host

Procedure

Step 1 Connect to your SDC host using SSH or the hypervisor console.

Step 2 Check the version of your Docker service by running this command:

```
docker version
```

Step 3 If you are running one of the latest virtual machines (VMs) you should see output like this:

```
 > docker version
Client:
     Version: 18.06.1-ce
     API version: 1.38
     Go version: go1.10.3
     Git commit: e68fc7a
     Built: Tue Aug 21 17:23:03 2018
     OS/Arch: linux/amd64
     Experimental: false
```

It's possible you may see an older version here.

Step 4 Run the following commands to update Docker and restart the service:

```
> sudo yum update docker-ce
> sudo service docker restart
```

Note
There will be a brief connectivity outage between Security Cloud Control and your devices while the docker service restarts.

Step 5 Run the docker version command again. You should see this output:

```
> docker version
Client:
    Version: 18.09.2
    API version: 1.39
    Go version: go1.10.6
    Git commit: 6247962
    Built: Sun Feb XX 04:13:27 2019
    OS/Arch: linux/amd64
    Experimental: false
```

Step 6 You are done. You have now upgraded to the latest, and patched, version of Docker.

Updating a Custom SDC Host

The Secure Device Connector (SDC) has been installed on CentOS 7 virtual machines up to now. However, as CentOS has reached its end-of-life and is no longer supported by Firewall in Security Cloud Control, we recommend migrating all SDCs from CentOS 7 to an Ubuntu virtual machine.

For more information, see Migrate an On-Premises Secure Device Connector and Secure Event Connector from a CentOS 7 Virtual Machine to an Ubuntu Virtual Machine.

This procedure applies if you are still using CentOS.

- If you have created your own SDC host you will need to follow the instructions to update based on how you installed Docker. If you used CentOS, yum and Docker-ce (the community edition) the preceding procedure will work.
- If you have installed Docker-ee (the enterprise edtion) or used an alternate method to install Docker, the fixed versions of Docker may be different. You can check the Docker page to determine the correct versions to install: Docker Security Update and Container Security Best Practices.

Bug Tracking

Cisco is continuing to evaluate this vulnerability and will update the advisory as additional information becomes available. After the advisory is marked Final, you can refer to the associated Cisco bug for further details:

CSCvo33929-CVE-2019-5736: runc container breakout

Invalid System Time

The Secure Device Connector (SDC) has been installed on CentOS 7 virtual machines up to now. However, as CentOS has reached its end-of-life and is no longer supported by Firewall in Security Cloud Control, we recommend migrating all SDCs from CentOS 7 to an Ubuntu virtual machine.

For more information, see Migrate an On-Premises Secure Device Connector and Secure Event Connector from a CentOS 7 Virtual Machine to an Ubuntu Virtual Machine.

This procedure applies if you are still using CentOS.

- Security Cloud Control is adapting a new way of communicating with the Secure Device Connector (SDC). To facilitate this, Security Cloud Control must migrate your existing SDC to the new communication method by February 1, 2024.

Note If your SDC is not migrated by February 1, 2024, Security Cloud Control will no longer be able to communicate with your devices through the SDC.

- Security Cloud Control's operations team attempted to migrate your SDC but was unsuccessful because your SDC system time was 15 minutes ahead or behind the AWS system time.

Follow the steps below to correct the system time issue. Once this problem is resolved, you can proceed with the migration.

Procedure

Step 1 Login to your SDC VM throught the VM terminal or by making an SSH connection.

Step 2 At the prompt, enter `sudo sdc-onboard setup` and authenticate.

Step 3 You are now going to respond to the SDC setup questions as if you are were setting up the SDC for the first time. Re-enter all the same passwords and network information as you had before, except take special note of the NTP server address:

a) Reset the root and Security Cloud Control user passwords with the same passowrds you used to setup the SDC.
b) When prompted, enter **y** to re-configure the network.
c) Enter the value for IP address/CIDR as you had before.
d) Enter the value for the network gateway as you had before.
e) Enter the value for the DNS Server as you had before.
f) When prompted for the NTP server, be sure to provide a valid NTP server address, such as `time.aws.com`.
g) Review the values you provided and enter **y** if they are correct.

Step 4 Validate that your time server is reachable and synchronized with your SDC by entering `date` at the prompt. The UTC date and time are displayed and you can compare it to your SDC time.

Contact the Cisco Technical Assistance Center (TAC) once you have completed these steps, or in case you encounter any errors. Once you have successfully completed these steps, the Security Cloud Control operations team can complete your SDC migration to the new communication method.

SDC version is lower than 202311****

The Secure Device Connector (SDC) has been installed on CentOS 7 virtual machines up to now. However, as CentOS has reached its end-of-life and is no longer supported by Firewall in Security Cloud Control, we recommend migrating all SDCs from CentOS 7 to an Ubuntu virtual machine.

For more information, see Migrate an On-Premises Secure Device Connector and Secure Event Connector from a CentOS 7 Virtual Machine to an Ubuntu Virtual Machine.

This procedure applies if you are still using CentOS.

- Security Cloud Control is adapting a new way of communicating with the Secure Device Connector (SDC). To facilitate this, Security Cloud Control must migrate your existing SDC to the new communication method by February 1, 2024.

Note If your SDC is not migrated by February 1, 2024, Security Cloud Control will no longer be able to communicate with your devices through the SDC.

- Security Cloud Control's operations team attempted to migrate your SDC but was unsuccessful because your tenant is running a version lower than 202311****.
- The current version of your SDC is listed on the Secure Connectors page by navigating from the Security Cloud Control navigation menu, **Administration** > **Integrations** > **Secure Connectors**. After selecting your SDC, its version number is found in the **Details** pane on the right of the screen.

Please follow the steps below to upgrade the SDC version. Once this problem is resolved, Security Cloud Control operations will run the migration process again.

Procedure

Step 1 Log in to the SDC VM and authenticate.

Step 2 At the prompt, enter `sudo su - sdc` and authenticate.

Step 3 At the prompt, enter `crontab -r`.

If you receive the message `no crontab for sdc` you can ignore it and move to the next step.

Step 4 At the prompt, enter `./toolkit/toolkit.sh upgrade`. Security Cloud Control will determine if you need an upgrade and upgrade the toolkit. Ensure that no errors were reported in the console.

Step 5 Verify the new version of the SDC:

a) Log in to Security Cloud Control.

b) Navigate to the Secure Connectors page by navigating from the Security Cloud Control menu bar, **Tools & Services** > **Secure Connectors**.

c) Select your SDC and click **Request Heartbeat** in the **Actions** pane.

d) Validate that the SDC version is 202311**** or later.

Contact the Cisco Technical Assistance Center (TAC) once you have completed these steps, or in case you encounter any errors. Once you have successfully completed these steps, the Security Cloud Control operations team can run the migration process again.

Certificate or Connection errors with AWS servers

Security Cloud Control is adapting a new way of communicating with the Secure Device Connector (SDC). To facilitate this, Security Cloud Control must migrate your existing SDC to the new communication method by February 1, 2024.

Note If your SDC is not migrated by February 1, 2024, Security Cloud Control will no longer be able to communicate with your devices through the SDC.

Security Cloud Control's operations team attempted to migrate your SDC but was unsuccessful because they experienced a connection issue.

Please follow the steps below to correct the connection issue. Once this problem is resolved, we will be able to proceed with the migration.

Procedure

Step 1 Create firewall rules that allow outbound proxy connections, on port 443, to the domains in your region:

- Production tenants in the Australia region:
  - cognito-identity.ap-southeast-2.amazonaws.com
  - cognito-idp.ap-southeast-2.amazonaws.com
  - sns.ap-southeast-2.amazonaws.com
  - sqs.ap-southeast-2.amazonaws.com

- Production tenants in the India region:
  - cognito-identity.ap-south-1.amazonaws.com
  - cognito-idp.ap-south-1.amazonaws.com
  - sns.ap-south-1.amazonaws.com
  - sqs.ap-south-1.amazonaws.com
- Production tenants in the US region:
  - cognito-identity.us-west-2.amazonaws.com
  - cognito-idp.us-west-2.amazonaws.com
  - sns.us-west-2.amazonaws.com
  - sqs.us-west-2.amazonaws.com
- Production tenants in the EU region:
  - cognito-identity.eu-central-1.amazonaws.com
  - cognito-idp.eu-central-1.amazonaws.com
  - sns.eu-central-1.amazonaws.com
  - sqs.eu-central-1.amazonaws.com
- Production tenants in the APJ region:
  - cognito-identity.ap-northeast-1.amazonaws.com
  - cognito-idp.ap-northeast-1.amazonaws.com
  - sqs.ap-northeast-1.amazonaws.com
  - sns.ap-northeast-1.amazonaws.com

Step 2 You can determine the full list of IP addresses you need to add to your firewall's "allow list" by using one of the commands below.

Note
The commands below are for users that have **jq** installed. The IP addresses will be displayed in a single list.

- Production tenants in the US region:

```
curl -s https://ip-ranges.amazonaws.com/ip-ranges.json | jq -r '.prefixes[] | select(
(.service == "AMAZON" ) and .region == "us-west-2") | .ip_prefix'
```

- Production tenants in the EU region:

```
curl -s https://ip-ranges.amazonaws.com/ip-ranges.json | jq -r '.prefixes[] | select(
(.service == "AMAZON" ) and .region == "eu-central-1") | .ip_prefix'
```

- Production tenants in the APJ region:

```
curl -s https://ip-ranges.amazonaws.com/ip-ranges.json | jq -r '.prefixes[] | select(
(.service == "AMAZON" ) and .region == "ap-northeast-1") | .ip_prefix'
```

Note
If you don't have **jq** installed, you can use this shortened version of the command:

```
curl -s https://ip-ranges.amazonaws.com/ip-ranges.json
```

Contact the Cisco Technical Assistance Center (TAC) once you have completed these steps, or in case you encounter any errors. Once you have successfully completed these steps, the Security Cloud Control operations team can complete your SDC migration to the new communication method.

Troubleshoot a Secure Event Connector

If none of the scenarios described below match your issue, open a case with Cisco Technical Assistance Center (TAC) for further assistance.

Troubleshoot SEC Onboarding Failures

The troubleshooting scenarios describe a variety of symptoms associated with Secure Event Connector (SEC) onboarding and operational failures. Use this topic to identify and resolve the issue impacting your deployment.

SEC onboarding failed

Symptom: SEC onboarding failed.

Repair: Remove and onboard the SEC again.

Tip Always use the copy link to copy the bootstrap data when on-boarding an SEC.

Note If this procedure does not correct the problem, gather the troubleshooting logs and contact your Managed Service Provider or the Cisco Technical Assistance Center.

Downloading, decoding, or extracting bootstrap data failed

Messages:

- `[Error] Downloading the bootstrap package failed.`
- `[Error] Extracting the bootstrap package failed.`
- `[Error] Max retries exceeded for bootstrap download.`

Diagnosis: Decoding bootstrap data failed.

Repair:

- Wait briefly and retry the bootstrap operation.

- Add a new SEC in the UI and attempt to bootstrap the new one instead.

Adequate CPU and memory not available

Message: [Error] Secure Event Connector minimum system requirements not met.

```
 [sdc@localhost ~]$ /usr/local/cdo/toolkit/sec.sh setup
[2020-06-10 04:37:26] ERROR unable to setup Secure Event Connector, minimum 4 cpus and 8
GB ram required, exiting.
```

Diagnosis: Adequate CPU and memory not available.

Repair: Increase the resources of your virtual machine to meet the minimum required specifications.

Host already has an SEC

Message: [Error] This host currently has an SEC enabled for the same tenant. Please remove the SEC before trying to bootstrap it again.

Diagnosis: SEC already running.

Repair: Ensure that there is no existing operational SEC in your environment. If one is present but not operational, remove it and then re-bootstrap the SEC.



Note Ensure that you are removing an active SEC. This error message can occur when a bootstrap progresses far enough for the system to assume normal operation but fails to fully complete. As a result, it is possible that a bootstrap error is causing this situation.

To confirm, run the command `sdc eventing healthcheck`. If the health check reports all green, it indicates that the SEC is active and functioning properly. In such a case, removing it would disrupt an operational SEC.

Contact Security Cloud Control Support

If none of the scenarios described above match your issue, open a case with Cisco Technical Assistance Center.

Troubleshoot Secure Event Connector Registration Failure

Symptom: Registration of Cisco Secure Event Connector to cloud eventing service fails.

Diagnosis: These are the most common reasons that the SEC fails to register to the eventing cloud service.

- **The SEC is unable to reach the Eventing cloud service from SEC**

  Repair: Ensure that Internet is accessible on port 443 and DNS is configured correctly.

- **Registration failure due to invalid or expired one-time-password in SEC bootstrapdata**

  Repair:

Procedure

Step 1 SSH to the host VM as the admin user, typically `cdo`.

Step 2 Switch to the `sdc` user usingthe command: `sudo su - sdc`.

Step 3 View the connector log by running command `sdc eventing logs --type connector`.

Note
If the registration has failed due to an invalid token, you see an error message in the log file similar to the example below:

```
context:(*contextImpl).handleFailed] registration - CE2001: Registration failed - Failed
to register the device because of invalid token. Retry with a new valid token.
```

Step 4 Remove the SEC.

Step 5 Add a new SEC in the UI and re-onboard.

Troubleshooting network problems using Security and Analytics Logging events

Here is a basic framework you can use to troubleshoot network problems using the Events Viewer.

This scenario assumes that your network operations team has had a report that a user can't access a resource on the network. Based on the user reporting the issue and their location, the network operations team has a reasonable idea of which firewall controls their access to resources.

Note This scenario also assumes that an FDM-managed device is the firewall managing the network traffic. Security Analytics and Logging does not collect logging information from other device types.

Procedure

Step 1 In the left pane, click **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Historical** tab.

Step 3 Start filtering events by **Time Range**. By default, the Historical tab shows the last hour of events. If that is the correct time range, enter the current date and time as the **End** time. If that is not the correct time range, enter a start and end time encompassing the time of the reported issue.

Step 4 Enter the IP address of the firewall that you suspect is controlling the user's access in the **Sensor ID** field. If it could be more than one firewall, filter events using **attribute:value** pairs in the search bar. Make two entries and combine them with an OR statement. For example: `SensorID:192.168.10.2 OR SensorID:192.168.20.2`.

Step 5 Enter the user's IP address in the **Source IP** field in the Events filter bar.

Step 6 If the user can't access a resource, try entering that resource's IP address in the **Destination IP** field.

Step 7 Expand the events in the results and look at their details. Here are some details to look at:

- **AC_RuleAction** - The action taken (Allow, Trust, Block) when the rule was triggered.
- **FirewallPolicy** - The policy in which the rule that triggered the event resides.
- **FirewallRule** - The name of the rule that triggered the event. If the value is Default Action then it was the default action of the policy that triggered the event and not one of the rules in the policy.
- **UserName** - The user associated with the initiator IP address. The Initiator IP address is the same as the Source IP address.

Step 8 If the rule action is preventing access, look at the FirewallRule and FirewallPolicy fields to identify the rule in the policy that is blocking access.

Event Logging Troubleshooting Log Files

The Secure Event Connector troubleshooting command collects logs, configurations, and limited system information, compressing them into a single archive to simplify the diagnosis of issues. If you already have a TAC case open, the compressed archive can also be sent directly to your TAC representative.

1. SSH to your host using the admin account, typically `cdo`.
2. Switch to the SDC user using the command `sudo su - sdc`
3. **If you do not have a TAC case open:** Run the command to gather and compress the troubleshooting bundle:

   ```
   sdc eventing troubleshoot
   ```

4. **If you already have a TAC case open:** Request an upload token from your TAC representative and use the command to gather, compress, and upload the troubleshooting bundle directly to your case:

   ```
   sdc eventing troubleshoot --case-number [your-tac-case-number] --token
   [the-token-tac-provided]
   ```

5. If you prefer to retrieve the troubleshooting bundle manually, use SCP or SFTP. Locate the absolute path to the bundle provided in the last log entry after running the troubleshoot command. Then, use the following SCP command to download the bundle to your local machine:

   ```
   scp -P [22 or whichever port you SSH on]
           cdo@your-vm-ip:/opt/cdo/.cdo/troubleshooting/cdo_[tenant-name-here]
           -troubleshooting-[timestamp-here].tar.gz ./sec-troubleshooting-bundle.tar.gz
   ```



Note Replace
`/opt/cdo/.cdo/troubleshooting/cdo_\[tenant-name-here\]-troubleshooting-\[timestamp-here\].tar.gz`
with the actual path displayed in the log output.

If you want to decompress the archive to review the logs and system configurations, use the command:
`tar xvf ./[sec-troubleshooting-bundle-filename].tar.gz`

SEC Status is Inactive in Security Cloud Control

Symptom: The Secure Event Connector status shows "Inactive" in the Security Cloud Control Secure Connectors page after onboarding for one of these reasons:

- Heartbeat failed
- Connector registration failed

Repair:

- **Heartbeat failed:** Request SEC heartbeat and refresh Secure Connector page to see if the status changes to "Active", if not check if the Secure Device Connector registration failed.
- **Connector registration failed:** Refer issue Troubleshooting SEC Registration Failure.

The SEC is online, but there are no events in Security Cloud Control Event Logging Page

Symptom: The Secure Event Connector shows "Active" in Security Cloud Control Secure Connectors page but you do not see events in Security Cloud Control Event viewer.

Solution or workaround:

Procedure

Step 1 SSH to your host using the admin account, typically `cdo`.

Step 2 Switch to the SDC user with the command `sudo su - sdc`.

Step 3 Perform the following checks:

- Check SEC connector log using the command `sdc eventing logs --type connector -n 100` and ensure the SEC registration was successful.

  If not, see Secure Event Connector Registration failure.

- Check SEC events log using the command `sdc eventing logs --type events -n 200` and ensure that the events are being processed.

  If not, contact Security Cloud Control support.

- Check the SEC supervisor log with `sdc eventing logs --type supervisor -n 100` and ensure the output is as shown below and all processes in **RUNNING** state.

  If not, contact Security Cloud Control support.

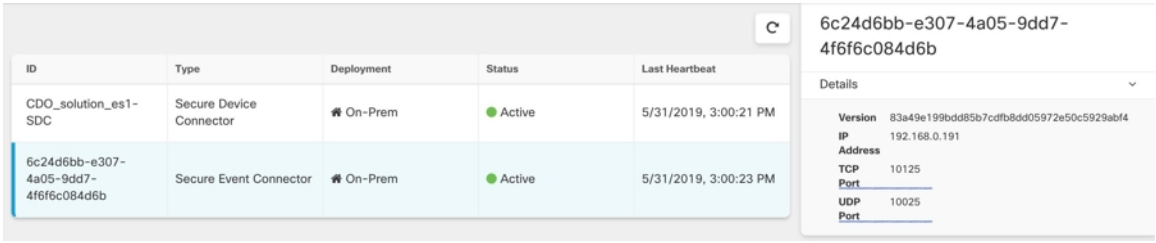
INFO success: estreamer-connector entered RUNNING state, process has stayed up for > than 1 seconds

INFO success: estreamer-plugin entered RUNNING state, process has stayed up for > than 1 seconds

INFO success: estreamer-rsyslog entered RUNNING state, process has stayed up for > than 1 seconds

- Ensure that the firewall rules on the on-premise SDC are not blocking the UDP and TCP ports shown for the SEC on the Secure Connectors page.

See Finding Your Device's TCP, UDP, and NSEL Port Used for Cisco Security Analytics and Logging to determine what ports you need to open.



- If you have setup SDC manually using a CentOS 7 VM of your own and have the firewall configured to block incoming requests, you could execute the following commands to unblock the UDP and TCP ports:

firewall-cmd --zone=public --add-port=<udp_port>/udp --permanent

firewall-cmd --zone=public --add-port=<tcp_port>/tcp --permanent

firewall-cmd --reload

- Using Linux network tools of your choice, check if packets are being received on these ports. If not receiving, re-check the FTD logging configuration.

If none of the above repairs work, raise a support ticket with Security Cloud Control support..

Remove an SEC from Your Host

The Secure Event Connector (SEC) delete command removes the SEC container along with its associated files from the Secure Device Connector (SDC) virtual machine. This command is typically used to address issues such as Secure Event Connector registration failures or onboarding failures.

To run the command:

Procedure

Step 1 SSH to your host using the admin account, typically `cdo`.

Step 2 Switch to the SDC user with `sudo su - sdc`.

Step 3 Run the command `sdc eventing delete`.

If applicable, you will be prompted to select the tenant you wish to delete. Follow the on-screen prompts to confirm your selection and fully remove the SEC data from the virtual machine.

Use Health Check to Learn the State of your Secure Event Connector

The Secure Event Connector (SEC) Health Check script provides information on the state of your SEC.

Follow this procedure to run Health Check:

Procedure

Step 1 SSH to your host using the admin account, typically `cdo`.

Step 2 Switch to the SDC user using the command `sudo su - sdc`

Step 3 Run the command `sdc eventing healthcheck` and, if applicable, select the tenant when prompted.

```
sdc@ci-sdc-4:~$ sdc eventing healthcheck
2025-05-06 16:36:20 [INFO] [ Manual Command ] even
2025-05-06 16:36:44 [INFO] Running SEC healthcheck


================================================

Running SEC health check for tenant CDO_blum-tenan
--

SEC cloud URL stage-api-sse.cisco.com is: Reachabl
SEC Connector status: Eventing subscription not en
okSEC Events Plugin is: Running
SEC UDP syslog server is: Running
SEC TCP syslog server is: Running
SEC netflow collector is: Running
Skipping SEC test event due to earlier failures
SEC healthcheck failed, please review any errors a
ok
================================================
```

Values of Health Check output:

- **SEC Cloud URL**: Displays the Security Cloud Control cloud URL and whether or not the SEC can reach Security Cloud Control.
- **SEC Connector**: Will show "Running" if the SEC connector has been onboarded correctly and has started.

- **SEC UDP syslog server**: Will show "Running" if the UDP syslog server is ready to send UDP events.
- **SEC TCP syslog server**: Will show "Running" if the TCP syslog server is ready to send TCP events.
- **SEC Connector status**: Will show Active if the SEC is running and onboarded to Security Cloud Control.
- **SEC Send sample event**: If at the end of the health check, all the status checks are "green," the tool sends a sample event. (If any of the processes are "Down," the tool skips sending the test event.) The sample event shows up in the Event Log as a policy named "sec-health-check."

Troubleshoot Security Cloud Control

Troubleshooting login failures

Login Fails Because You are Inadvertently Logging in to the Wrong Security Cloud Control Region

Make sure you are logging in to the appropriate Security Cloud Control region. After you log in to https://sign-on.security.cisco.com, you will be given a choice of what region to access.

Troubleshooting Login Failures after Migration

Login to Security Cloud Control Fails Because of Incorrect Username or Password

Solution If you try to log in to Security Cloud Control and you *know* you are using the correct username and password and your login is failing, or you try the "forgot password" option and cannot recover a viable password, you may have tried to log in without creating a new Cisco Security Cloud Sign On account. You need to sign up for a new Cisco Security Cloud Sign On Account.

Login to the Cisco Security Cloud Sign On Dashboard Succeeds but You Can't Launch Security Cloud Control

Solution You may have created a Cisco Security Cloud Sign On account with a different username than your Security Cloud Control tenant. Contact the Cisco Technical Assistance Center (TAC) to standardize your user information between Security Cloud Control and Cisco Secure Sign-On.

Login Fails Using a Saved Bookmark

Solution You may be attempting to log in using an old bookmark you saved in your browser. The bookmark could be pointing to https://cdo.onelogin.com.

Solution Log in to https://sign-on.security.cisco.com.

- **Solution** If you have created your new secure sign-on account, click the Security Cloud Control tile on the dashboard that corresponds to the region in which your tenant was created:
  - **Solution** Security Cloud Control APJ
  - **Solution** Security Cloud Control Australia
  - **Solution** Security Cloud Control EU
  - **Solution** Security Cloud Control India

- **Solution** Security Cloud Control US

- **Solution** Update your bookmark to point to https://sign-on.security.cisco.com.

Troubleshooting Access and Certificates

Troubleshoot User Access with Security Cloud Control

Consider the case of users being denied access to a resource that they should have access to. Here is an approach you can take to diagnose and remediate that problem.

Procedure

Step 1 Users inform your security team that their access to a resource is blocked. Determine how that resource is typically reached. What is it's IP address? Do you reach it on a specific port? What protocol is used to send information to the resource?

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **ASA** tab and select the ASA and run packet tracer. See ASA Packet Tracer for more instructions.

Step 4 Examine the packet trace table for rules that may have denied access to the resource.

Step 5 Edit the rule from Security Cloud Control to correct the behavior. Your ASA is now out of sync with Security Cloud Control.

Step 6 Deploy the changes to the ASA from the **Security Devices** page. Security Cloud Control traces packets through the configuration saved on the ASA not a configuration staged on Security Cloud Control. Be aware, you will also be deploying any other configuration changes staged on Security Cloud Control to your ASA.

Step 7 Re-run packet tracer to determine if the policy change provides the desired results. Confirm that your users now have access to the resource.

Step 8 Assuming your users now have access, clear the change request label in Security Cloud Control. This prevents unrelated activity from being associated with this fix.

Note
If the change you made doesn't fix the problem or creates some new problems and you want to return to your previous configuration, you can do restore the ASA Configuration.

See Restoring ASA Configurations.

Resolve New Fingerprint Detected State

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Select the device in the **New Fingerprint Detected** state.

Step 6 Click **Review Fingerprint** in the New Fingerprint Detected pane.

Step 7 When prompted to review and accept the fingerprint:

a. Click **Download Fingerprint** and review it.

b. If you are satisfied with the fingerprint, click **Accept**. If you are not, click **Cancel**.

Step 8 After you resolve the new fingerprint issue, the connectivity state of the device may show **Online** and the Configuration Status may show "Not Synced" or "Conflict Detected." Review Resolve Configuration Conflicts to review and resolve configuration differences between Security Cloud Control and the device.

Troubleshooting network problems using Security and Analytics Logging events

Here is a basic framework you can use to troubleshoot network problems using the Events Viewer.

This scenario assumes that your network operations team has had a report that a user can't access a resource on the network. Based on the user reporting the issue and their location, the network operations team has a reasonable idea of which firewall controls their access to resources.

Note This scenario also assumes that an FDM-managed device is the firewall managing the network traffic. Security Analytics and Logging does not collect logging information from other device types.

Procedure

Step 1 In the left pane, click **Events & Logs** > **Events** > **Event Logging**.

Step 2 Click the **Historical** tab.

Step 3 Start filtering events by **Time Range**. By default, the Historical tab shows the last hour of events. If that is the correct time range, enter the current date and time as the **End** time. If that is not the correct time range, enter a start and end time encompassing the time of the reported issue.

Step 4 Enter the IP address of the firewall that you suspect is controlling the user's access in the **Sensor ID** field. If it could be more than one firewall, filter events using **attribute:value** pairs in the search bar. Make two entries and combine them with an OR statement. For example: `SensorID:192.168.10.2 OR SensorID:192.168.20.2`.

Step 5 Enter the user's IP address in the **Source IP** field in the Events filter bar.

Step 6 If the user can't access a resource, try entering that resource's IP address in the **Destination IP** field.

Step 7 Expand the events in the results and look at their details. Here are some details to look at:

- **AC_RuleAction** - The action taken (Allow, Trust, Block) when the rule was triggered.
- **FirewallPolicy** - The policy in which the rule that triggered the event resides.
- **FirewallRule** - The name of the rule that triggered the event. If the value is Default Action then it was the default action of the policy that triggered the event and not one of the rules in the policy.

- **UserName** - The user associated with the initiator IP address. The Initiator IP address is the same as the Source IP address.

Step 8 If the rule action is preventing access, look at the FirewallRule and FirewallPolicy fields to identify the rule in the policy that is blocking access.

Troubleshooting SSL Decryption Issues

Handling Web Sites Where Decrypt Re-sign Works for a Browser but not an App (SSL or Certificate Authority Pinning)

Some apps for smart phones and other devices use a technique called SSL (or Certificate Authority) pinning. The SSL pinning technique embeds the hash of the original server certificate inside the app itself. As a result, when the app receives the resigned certificate from the Firepower Threat Defense device, the hash validation fails and the connection is aborted.

The primary symptom is that users cannot connect to the web site using the site's app, but they can connect using the web browser, even when using the browser on the same device where the app fails. For example, users cannot use the Facebook iOS or Android app, but they can point Safari or Chrome at https://www.facebook.com and make a successful connection.

Because SSL pinning is specifically used to avoid man-in-the-middle attacks, there is no workaround. You must choose between the following options:

More Details

If a site works in a browser but not in an app on the same device, you are almost certainly looking at an instance of SSL pinning. However, if you want to delve deeper, you can use connection events to identify SSL pinning in addition to the browser test.

There are two ways an app might deal with hash validation failures:

- Group 1 apps, such as Facebook, send an SSL ALERT Message as soon as it receives the SH, CERT, SHD message from the server. The Alert is usually an "Unknown CA (48)" alert indicating SSL Pinning. A TCP Reset is sent following the Alert message. You should see the following symptoms in the event details:
  - `SSL Flow Flags include ALERT_SEEN.`
  - `SSL Flow Flags do not include APP_DATA_C2S or APP_DATA_S2C.`
  - `SSL Flow Messages typically are: CLIENT_HELLO, SERVER_HELLO, SERVER_CERTIFICATE, SERVER_KEY_EXCHANGE, SERVER_HELLO_DONE.`
- Group 2 apps, such as Dropbox, do not send any alerts. Instead they wait until the handshake is done and then send a TCP Reset. You should see the following symptoms in the event:
  - `SSL Flow Flags do not include ALERT_SEEN, APP_DATA_C2S, or APP_DATA_S2C.`
  - `SSL Flow Messages typically are: CLIENT_HELLO, SERVER_HELLO, SERVER_CERTIFICATE, SERVER_KEY_EXCHANGE, SERVER_HELLO_DONE, CLIENT_KEY_EXCHANGE, CLIENT_CHANGE_CIPHER_SPEC, CLIENT_FINISHED, SERVER_CHANGE_CIPHER_SPEC, SERVER_FINISHED.`

Troubleshooting Login Failures after Migration

Login to Security Cloud Control Fails Because of Incorrect Username or Password

Solution If you try to log in to Security Cloud Control and you *know* you are using the correct username and password and your login is failing, or you try the "forgot password" option and cannot recover a viable password, you may have tried to log in without creating a new Cisco Security Cloud Sign On account. You need to sign up for a new Cisco Security Cloud Sign On Account.

Login to the Cisco Security Cloud Sign On Dashboard Succeeds but You Can't Launch Security Cloud Control

Solution You may have created a Cisco Security Cloud Sign On account with a different username than your Security Cloud Control tenant. Contact the Cisco Technical Assistance Center (TAC) to standardize your user information between Security Cloud Control and Cisco Secure Sign-On.

Login Fails Using a Saved Bookmark

Solution You may be attempting to log in using an old bookmark you saved in your browser. The bookmark could be pointing to https://cdo.onelogin.com.

Solution Log in to https://sign-on.security.cisco.com.

- **Solution** If you have created your new secure sign-on account, click the Security Cloud Control tile on the dashboard that corresponds to the region in which your tenant was created:
  - **Solution** Security Cloud Control APJ
  - **Solution** Security Cloud Control Australia
  - **Solution** Security Cloud Control EU
  - **Solution** Security Cloud Control India
  - **Solution** Security Cloud Control US
- **Solution** Update your bookmark to point to https://sign-on.security.cisco.com.

Device connectivity states

You can view the connectivity states of the devices onboarded in your Security Cloud Control tenant. This topic helps you understand the various connectivity states. On the **Security Devices** page, the **Connectivity** column displays the device connectivity states.

When the device connectivity state is 'Online' it means that the device is powered on and connected to Security Cloud Control. The other states described in the table below usually occur when the device is running into problems for various reasons. The table provides the method to recover from such problems. It may be that there is more than one problem causing the connection failure. When you attempt to reconnect, Security Cloud Control will prompt you to fix all of these problems first before performing the reconnect.

Device Connectivity State	Possible Reasons	Resolution
Online	Device is powered on and connected to Security Cloud Control.	NA

Device Connectivity State	Possible Reasons	Resolution
Offline	Device is powered down or lost network connectivity.	Check whether the device is offline.
Insufficient licenses	Device doesn't have sufficient licenses.	Troubleshoot Insufficient Licenses, on page 835
Invalid credentials	Username and password combination used by Security Cloud Control to connect to the device is incorrect.	Troubleshoot Invalid Credentials, on page 836
Onboarding	Device onboarding is initiated but is not complete.	Check you device's connectivity and ensure you complete the device registration.
Unknown	Device onboarding failed and Security Cloud Control cannot fetch the connectivity state of the device.	On the **Security Devices** page, select the device and choose **Check for Changes** from the right pane, to attempt fetching the latest configuration from the device.
New Certificate Detected	Certificate on the device has changed. If the device uses a self-signed certificate, then this could have happened due to the device being power cycled.	Troubleshoot New Certificate Issues, on page 836
Onboarding Error	Security Cloud Control may have lost connectivity with the device when onboarding it.	Troubleshoot Onboarding Error, on page 844

Troubleshoot Device Unregistered

The FDM-managed device may have been unregistered from the cloud via Firewall Device Manager.

Perform the following to register the device again on the cloud:

Procedure

Step 1 In the **Security Devices** page, click the **Devices** tab.

Step 2 Click the **FTD** tab and select the device in the "Device Unregistered" state, and see the error message on the right.

Step 3 If the unregistered device was onboarded using the registration key, Security Cloud Control prompts you to generate a new registration key as the previously applied key has expired.

a) Click the Refresh button to generate a new registration key and then click the Copy icon .

b) Log into the Firewall Device Manager of the device you want to reregister with Security Cloud Control.

c) Under **System Settings**, click **Cloud Services**.

d) In the Security Cloud Control area, expand **Get Started**.
e) In the **Registration Key** field, paste the registration key that you generated in Security Cloud Control.
f) Click **Register** and then **Accept** the Cisco Disclosure. Firewall Device Manager sends the registration request to Security Cloud Control.
g) Refresh the **Security Devices** page in Security Cloud Control until you see the device's connectivity state changes to "Read Error".
h) Click **Read Configuration** for Security Cloud Control to read the configuration from the device.

Step 4 If the unregistered device was onboarded using the serial number, Security Cloud Control prompts you to auto-enroll the device from Firewall Device Manager.

a) Log into the Firewall Device Manager of the device you want to reregister with Security Cloud Control.
b) Under **System Settings**, click **Cloud Services**.
c) Select the **Auto-enroll with Tenancy from Security Cloud Control** option and click **Register**.
d) Refresh the **Security Devices** page in Security Cloud Control until you see the device's connectivity state changes to "Read Error".
e) Click **Read Configuration** for Security Cloud Control to read the configuration from the device.

Troubleshoot Insufficient Licenses

If the device connectivity status shows "Insufficient License", do the following:

- Wait for some time until the device attains the license. Typically it takes some time for Cisco Smart Software Manager to apply a new license to the device.
- If the device status doesn't change, refresh the Security Cloud Control portal by signing out from Security Cloud Control and signing back to resolve any network communication glitch between license server and device.
- If the portal refresh doesn't change the device status, perform the following:

Procedure

Step 1 Generate a new token from Cisco Smart Software Manager and copy it. You can watch the Generate Smart Licensing video for more information.

Step 2 In the left pane, click the **Inventory** page.

Step 3 In the left pane, click **Security Devices**.

Step 4 Click the **Devices** tab.

Step 5 Click the appropriate device type tab and select the device with the **Insufficient License** state.

Step 6 In the **Device Details** pane, click **Manage Licenses** appearing in **Insufficient Licenses**. The **Manage Licenses** window appears.

Step 7 In the **Activate** field, paste the new token and click **Register Device**.

Once the token is applied successfully to the device, its connectivity state turns to **Online**.

Troubleshoot Invalid Credentials

Perform the following to resolve device disconnection due to invalid credentials:

Procedure

Step 1 In the left pane, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab and select the device with the **Invalid Credentials** state.

Step 5 In the **Device Details** pane, click **Reconnect** appearing in **Invalid Credentials**. Security Cloud Control attempts to reconnect with your device.

Step 6 When prompted enter the new username and password for the device.

Step 7 Click **Continue**.

Step 8 After the device is online and ready to use, click **Close**.

Step 9 It is likely that because Security Cloud Control attempted to use the wrong credentials to connect to the device, the username and password combination Security Cloud Control should use to connect to the device was changed directly on the device. You may now see that the device is "Online" but the configuration state is "Conflict Detected." Use Resolve Configuration Conflicts to review and resolve configuration differences between Security Cloud Control and the device.

Troubleshoot New Certificate Issues

Security Cloud Control's Use of Certificates

Security Cloud Control checks the validity of certificates when connecting to devices. Specifically, Security Cloud Control requires that:

1. The device uses a TLS version equal to or greater than 1.0.
2. The certificate presented by the device is not expired, and its issuance date is in the past (i.e. it is already valid, not scheduled to become valid at a later date).
3. The certificate must be a SHA-256 certificate. SHA-1 certificates will not be accepted.
4. One of these conditions is true:
   - The device uses a self-signed certificate, and it is the same as the most recent one trusted by an authorized user.
   - The device uses a certificate signed by a trusted Certificate Authority (CA), and provides a certificate chain linking the presented leaf certificate to the relevant CA.

These are the ways Security Cloud Control uses certificates differently than browsers:

- In the case of self-signed certificates, Security Cloud Control overrides the domain name check, instead checking that the certificate exactly matches the one trusted by an authorized user during device onboarding or reconnection.
- Security Cloud Control does not yet support internal CAs. There is currently no way to check a certificate signed by an internal CA.

  It is possible to disable certificate checking for ASA devices on a per-device basis. When an ASA's certificate cannot be trusted by Security Cloud Control, you will have the option of disabling certificate checking for that device. If you have attempted to disable certificate checking for the device and you are still unable to onboard it, it is likely that the IP address and port you specified for the device is incorrect or unreachable. There is no way to disable certificate checking globally, or to disable certificate checking for a device with a supported certificate. There is no way to disable certificate checking for non-ASA devices.

  When you disable certificate checking for a device, Security Cloud Control will still use TLS to connect to the device, but it will not validate the certificate used to establish the connection. This means that a passive man-in-the-middle attacker will not be able to eavesdrop on the connection, but an active man-in-the-middle could intercept the connection by supplying Security Cloud Control with an invalid certificate.

Identifying Certificate Issues

There are several reasons that Security Cloud Control may not be able to onboard a device. When the UI shows a message that "Security Cloud Control cannot connect to the device using the certificate presented," there is a problem with the certificate. When the UI does not show this message, the problem is more likely related to connectivity problems (the device is unreachable) or other network errors.

To determine why Security Cloud Control rejects a given certificate, you can use the openssl command-line tool on the SDC host or another host that can reach the relevant device. Use the following command to create a file showing the certificates presented by the device:

```
openssl s_client -showcerts -connect <host>:<port> &> <filename>.txt
```

This command will start an interactive session, so you will need to use Ctrl-c to exit after a couple of seconds.

You should now have a file containing output like the following:

```
depth=2 C = US, O = GeoTrust Inc., CN = GeoTrust Global CA
verify return:1
depth=1 C = US, O = Google Inc, CN = Google Internet Authority G2
verify return:1
depth=0 C = US, ST = California, L = Mountain View, O = Google Inc, CN = *.google.com
verify return:1 CONNECTED(00000003)
---
Certificate chain
0 s:/C=US/ST=California/L=Mountain View/O=Google Inc/CN=*.google.com
  i:/C=US/O=Google Inc/CN=Google Internet Authority G2
-----BEGIN CERTIFICATE-----
MIIH0DCCBrigAwIBAgIIUOMfH+8ftN8wDQYJKoZIhvcNAQELBQAwSTELMAkGA1UE
....lots of base64...
tzw9TylimhJpZcl4qihFVTgFM7rMU2VHulpJgA59gdbaO/Bf
-----END CERTIFICATE-----
1 s:/C=US/O=Google Inc/CN=Google Internet Authority G2
  i:/C=US/O=GeoTrust Inc./CN=GeoTrust Global CA
-----BEGIN CERTIFICATE-----
MIID8DCCAtigAwIBAgIDAjqSMA0GCSqGSIb3DQEBCwUAMEIxCzAJBgNVBAYTAlVT
....lots of base64...
tzw9TylimhJpZcl4qihFVTgFM7rMU2VHulpJgA59gdbaO/Bf
-----END CERTIFICATE-----
```

```
2 s:/C=US/O=GeoTrust Inc./CN=GeoTrust Global CA
  i:/C=US/O=Equifax/OU=Equifax Secure Certificate Authority
-----BEGIN CERTIFICATE-----
MIIDfTCCAuagAwIBAgIDErvmMA0GCSqGSIb3DQEBBQUAME4xCzAJBgNVBAYTAlVT
....lots of base64...
b8ravHNjkOR/ez4iyz0H7V84dJzjA1BOoa+Y7mHyhD8S
-----END CERTIFICATE-----
---
Server certificate
subject=/C=US/ST=California/L=Mountain View/O=Google Inc/CN=*.google.com
issuer=/C=US/O=Google Inc/CN=Google Internet Authority G2
---
No client certificate CA names sent
Peer signing digest: SHA512
Server Temp Key: ECDH, P-256, 256 bits

---
SSL handshake has read 4575 bytes and written 434 bytes
---
New, TLSv1/SSLv3, Cipher is ECDHE-RSA-AES128-GCM-SHA256
Server public key is 2048 bit Secure Renegotiation IS supported
Compression: NONE
Expansion: NONE
No ALPN negotiated
SSL-Session:
    Protocol : TLSv1.2
    Cipher : ECDHE-RSA-AES128-GCM-SHA256
    Session-ID: 48F046F3360225D51BE3362B50CE4FE8DB6D6B80B871C2A6DD5461850C4CF5AB
    Session-ID-ctx:
    Master-Key:
9A9CCBAA4F5A25B95C37EF7C6870F8C5DD3755A9A7B4CCE4535190B793DEFF53F94203AB0A62F9F70B9099FBFEBAB1B6

    Key-Arg : None
    PSK identity: None
    PSK identity hint: None
    SRP username: None
    TLS session ticket lifetime hint: 100800 (seconds)
    TLS session ticket:
    0000 - 7a eb 54 dd ac 48 7e 76-30 73 b2 97 95 40 5b de z.T..H~v0s...@[.
    0010 - f3 53 bf c8 41 36 66 3e-5b 35 a3 03 85 6f 7d 0c .S..A6f>[5...o}.
    0020 - 4b a6 90 6f 95 e2 ec 03-31 5b 08 ca 65 6f 8f a6 K..o....1[..eo..
    0030 - 71 3d c1 53 b1 29 41 fc-d3 cb 03 bc a4 a9 33 28 q=.S.)A.......3(
    0040 - f8 c8 6e 0a dc b3 e1 63-0e 8f f2 63 e6 64 0a 36 ..n....c...c.d.6
    0050 - 22 cb 00 3a 59 1d 8d b2-5c 21 be 02 52 28 45 9d "..:Y...\!..R(E.
    0060 - 72 e3 84 23 b6 f0 e2 7c-8a a3 e8 00 2b fd 42 1d r..#...|....+.B.
    0070 - 23 35 6d f7 7d 85 39 1c-ad cd 49 f1 fd dd 15 de #5m.}.9...I.....
    0080 - f6 9c ff 5e 45 9c 7c eb-6b 85 78 b5 49 ea c4 45 ...^E.|.k.x.I..E
    0090 - 6e 02 24 1b 45 fc 41 a2-87 dd 17 4a 04 36 e6 63 n.$.E.A....J.6.c
    00a0 - 72 a4 ad
    00a4 - <SPACES/NULS> Start Time: 1476476711 Timeout : 300 (sec)
Verify return code: 0 (ok)
---
```

The first thing to note in this output is the last line, where you see the **Verify return code**. If there is a certificate issue, the return code will be non-zero and there will be a description of the error.

Expand this list of certificate error code to see common errors and how to remediate them

0 X509_V_OK The operation was successful.

2 X509_V_ERR_UNABLE_TO_GET_ISSUER_CERT The issuer certificate of an untrusted certificate could not be found.

3 X509_V_ERR_UNABLE_TO_GET_CRL The CRL of a certificate could not be found.

4 X509_V_ERR_UNABLE_TO_DECRYPT_CERT_SIGNATURE The certificate signature could not be decrypted. This means that the actual signature value could not be determined rather than it not matching the expected value. This is only meaningful for RSA keys.

5 X509_V_ERR_UNABLE_TO_DECRYPT_CRL_SIGNATURE The CRL signature could not be decrypted. This means that the actual signature value could not be determined rather than it not matching the expected value. Unused.

6 X509_V_ERR_UNABLE_TO_DECODE_ISSUER_PUBLIC_KEY The public key in the certificate SubjectPublicKeyInfo could not be read.

7 X509_V_ERR_CERT_SIGNATURE_FAILURE The signature of the certificate is invalid.

8 X509_V_ERR_CRL_SIGNATURE_FAILURE The signature of the certificate is invalid.

9 X509_V_ERR_CERT_NOT_YET_VALID The certificate is not yet valid: the notBefore date is after the current time. See Verify return code: 9 (certificate is not yet valid) below for more information.

10 X509_V_ERR_CERT_HAS_EXPIRED The certificate has expired; that is, the notAfter date is before the current time. See Verify return code: 10 (certificate has expired) below for more information.

11 X509_V_ERR_CRL_NOT_YET_VALID The CRL is not yet valid.

12 X509_V_ERR_CRL_HAS_EXPIRED The CRL has expired.

13 X509_V_ERR_ERROR_IN_CERT_NOT_BEFORE_FIELD The certificate notBefore field contains an invalid time.

14 X509_V_ERR_ERROR_IN_CERT_NOT_AFTER_FIELD The certificate notAfter field contains an invalid time.

15 X509_V_ERR_ERROR_IN_CRL_LAST_UPDATE_FIELD The CRL lastUpdate field contains an invalid time.

16 X509_V_ERR_ERROR_IN_CRL_NEXT_UPDATE_FIELD The CRL nextUpdate field contains an invalid time.

17 X509_V_ERR_OUT_OF_MEM An error occurred trying to allocate memory. This should never happen.

18 X509_V_ERR_DEPTH_ZERO_SELF_SIGNED_CERT The passed certificate is self-signed and the same certificate cannot be found in the list of trusted certificates.

19 X509_V_ERR_SELF_SIGNED_CERT_IN_CHAIN The certificate chain could be built up using the untrusted certificates but the root could not be found locally.

20 X509_V_ERR_UNABLE_TO_GET_ISSUER_CERT_LOCALLY The issuer certificate of a locally looked up certificate could not be found. This normally means the list of trusted certificates is not complete.

21 X509_V_ERR_UNABLE_TO_VERIFY_LEAF_SIGNATURE No signatures could be verified because the chain contains only one certificate and it is not self-signed. See "Verify return code: 21 (unable to verify the first certificate)" below for more information. Verify return code: 21 (unable to verify the first certificate) below for more information.

22 X509_V_ERR_CERT_CHAIN_TOO_LONG The certificate chain length is greater than the supplied maximum depth. Unused.

23 X509_V_ERR_CERT_REVOKED The certificate has been revoked.

24 X509_V_ERR_INVALID_CA A CA certificate is invalid. Either it is not a CA or its extensions are not consistent with the supplied purpose.

25 X509_V_ERR_PATH_LENGTH_EXCEEDED The basicConstraints pathlength parameter has been exceeded.

26 X509_V_ERR_INVALID_PURPOSE The supplied certificate cannot be used for the specified purpose.

27 X509_V_ERR_CERT_UNTRUSTED The root CA is not marked as trusted for the specified purpose.

28 X509_V_ERR_CERT_REJECTED The root CA is marked to reject the specified purpose.

29 X509_V_ERR_SUBJECT_ISSUER_MISMATCH The current candidate issuer certificate was rejected because its subject name did not match the issuer name of the current certificate. Only displayed when the -issuer_checks option is set.

30 X509_V_ERR_AKID_SKID_MISMATCH The current candidate issuer certificate was rejected because its subject key identifier was present and did not match the authority key identifier current certificate. Only displayed when the -issuer_checks option is set.

31 X509_V_ERR_AKID_ISSUER_SERIAL_MISMATCH The current candidate issuer certificate was rejected because its issuer name and serial number were present and did not match the authority key identifier of the current certificate. Only displayed when the -issuer_checks option is set.

32 X509_V_ERR_KEYUSAGE_NO_CERTSIGN The current candidate issuer certificate was rejected because its keyUsage extension does not permit certificate signing.

50 X509_V_ERR_APPLICATION_VERIFICATION An application specific error. Unused.

New Certificate Detected

If you upgrade a device that has a self-signed certificate and a new certificate is generated after the upgrade process, Security Cloud Control may generate a "New Certificate Detected" message as both a **Configuration Status** and **Connectivity** status. You must manually confirm and resolve this issue before you can continue managing it from Security Cloud Control. Once the certificate is synchronized and the device is in a healthy state, you can manage the device.

Use the following procedure to resolve a new certificate:

1. Navigate to the **Inventory** page.
2. In the left pane, click **Security Devices**.
3. Use the filter to display devices with a **New Certificate Detected** connectivity or configuration status and select the desired device.
4. In the action pane, click **Review Certificate**. Security Cloud Control allows you to download the certificate for review and accept the new certificate.
5. In the Device Sync window, click **Accept** or in the Reconnecting to Device window, click **Continue**.

   Security Cloud Control automatically synchronizes the device with the new self-signed certificate. You may have to manually refresh the page to see the device once it's synced.

Certificate Error Codes

Verify return code: 0 (ok) but Security Cloud Control returns certificate error

Once Security Cloud Control has the certificate, it attempts to connect to the URL of the device by making a GET call to "https://<device_ip>:<port>". If this does not work, Security Cloud Control will display a certificate error. If you find that the certificate is valid (openssl returns 0 ok) the problem may be that a different service is listening on the port you're trying to connect to. You can use the command:

```
curl -k -u <username>:<password> https://<device_id>:<device_port>/admin/exec/show%20version
```

to determine whether you are definitely talking to an ASA and check if HTTPS server running on the correct port on the ASA:

```
 # show asp table socket
Protocol         Socket         State         Local Address             Foreign Address
SSL             00019b98         LISTEN        192.168.1.5:443             0.0.0.0:*
SSL             00029e18         LISTEN        192.168.2.5:443             0.0.0.0:*
TCP             00032208         LISTEN        192.168.1.5:22              0.0.0.0:*
```

Verify return code: 9 (certificate is not yet valid)

This error means that the issuance date of the certificate provided is in the future, so clients will not treat it as valid. This can be caused by a poorly-constructed certificate, or in the case of a self-signed certificate it can be cause by the device time being wrong when it generated the certificate.

You should see a line in the error including the notBefore date of the certificate:

```
depth=0 CN = ASA Temporary Self Signed Certificate
verify error:num=18:self signed certificate
verify return:1
depth=0 CN = ASA Temporary Self Signed Certificate
verify error:num=9:certificate is not yet valid
notBefore=Oct 21 19:43:15 2016 GMT
verify return:1
depth=0 CN = ASA Temporary Self Signed Certificate
notBefore=Oct 21 19:43:15 2016 GMT
```

From this error, you can determine when the certificate will become valid.

Remediation

The notBefore date of the certificate needs to be in the past. You can reissue the certificate with an earlier notBefore date. This issue can also arise when the time is not set correctly either on the client or issuing device.

Verify return code: 10 (certificate has expired)

This error means that at least one of the certificates provided has expired. You should see a line in the error including the notBefore date of the certificate:

```
error 10 at 0 depth lookup:certificate has expired
```

The expiration date is located in the certificate body.

Remediation

If the certificate is truly expired, the only remediation is to get another certificate. If the certificate's expiration is still in the future, but openssl claims that it is expired, check the time and date on your computer. For instance, if a certificate is set to expire in the year 2020, but the date on your computer is in 2021, your computer will treat that certificate as expired.

Verify return code: 21 (unable to verify the first certificate)

This error indicates that there is a problem with the certificate chain, and openssl cannot verify that the certificate presented by the device should be trusted. Let's look at the certificate chain from the example above to see how certificate chains should work:

```
---
Certificate chain
0 s:/C=US/ST=California/L=Mountain View/O=Google Inc/CN=*.google.com
i:/C=US/O=Google Inc/CN=Google Internet Authority G2

-----BEGIN CERTIFICATE-----
MIIH0DCCBrigAwIBAgIIUOMfH+8ftN8wDQYJKoZIhvcNAQELBQAwSTELMAkGA1UE
```

```
....lots of base64...
tzw9TylimhJpZcl4qihFVTgFM7rMU2VHulpJgA59gdbaO/Bf
-----END CERTIFICATE-----

1 s:/C=US/O=Google Inc/CN=Google Internet Authority G2
i:/C=US/O=GeoTrust Inc./CN=GeoTrust Global CA

-----BEGIN CERTIFICATE-----
MIID8DCCAtigAwIBAgIDAjqSMA0GCSqGSIb3DQEBCwUAMEIxCzAJBgNVBAYTAlVT
....lots of base64...
tzw9TylimhJpZcl4qihFVTgFM7rMU2VHulpJgA59gdbaO/Bf
-----END CERTIFICATE-----

2 s:/C=US/O=GeoTrust Inc./CN=GeoTrust Global CA
i:/C=US/O=Equifax/OU=Equifax Secure Certificate Authority

-----BEGIN CERTIFICATE-----
MIIDfTCCAuagAwIBAgIDErvmMA0GCSqGSIb3DQEBBQUAME4xCzAJBgNVBAYTAlVT
....lots of base64...
b8ravHNjkOR/ez4iyz0H7V84dJzjA1BOoa+Y7mHyhD8S
-----END CERTIFICATE----- ---
```

The certificate chain is a list of certificates presented by the server, beginning with the server's own certificate and then including increasingly higher-level intermediate certificates linking the server's certificate with a Certificate Authority's top-level certificate. Each certificate lists its Subject (the line starting with 's:' and its Issuer (the line starting with 'i').

The Subject is the entity identified by the certificate. It includes the Organization name and sometimes the Common Name of the entity for which the certificate was issued.

The Issuer is the entity that issued the certificate. It also includes an Organization field and sometimes a Common Name.

If a server had a certificate issued directly by a trusted Certificate Authority, it would not need to include any other certificates in its certificate chain. It would present one certificate that looked like:

```
--- Certificate chain 0 s:/C=US/ST=California/L=Anytown/O=ExampleCo/CN=*.example.com
i:/C=US/O=Trusted Authority/CN=Trusted Authority
-----BEGIN CERTIFICATE-----
MIIH0DCCBrigAwIBAgIIUOMfH+8ftN8wDQYJKoZIhvcNAQELBQAwSTELMAkGA1UE
....lots of base64...
tzw9TylimhJpZcl4qihFVTgFM7rMU2VHulpJgA59gdbaO/Bf
-----END CERTIFICATE----- ---
```

Given this certificate, openssl would verify that the ExampleCo certificate for ***.example.com** was correctly signed by the Trusted Authority certificate, which would be present in openssl's built-in trust store. After that verification, openssl would successfully connect to the device.

However, most servers do not have certificates signed directly by a trusted CA. Instead, as in the first example, the server's certificate is signed by one or more intermediates, and the highest-level intermediate has a certificate signed by the trusted CA. OpenSSL does not trust these intermediate CAs by default, and can only verify them if it is given a complete certificate chain ending in a trusted CA.

It is critically important that servers whose certificates are signed by intermediate authorities supply ALL the certificates linking them to a trusted CA, including all of the intermediate certificates. If they don't supply this entire chain, the output from openssl will look something like this:

```
depth=0 OU = Example Unit, CN = example.com
verify error:num=20:unable to get local issuer certificate
verify return:1

depth=0 OU = Example Unit, CN = example.com
verify error:num=27:certificate not trusted
```

```
verify return:1

depth=0 OU = Example Unit, CN = example.com
verify error:num=21:unable to verify the first certificate
verify return:1

CONNECTED(00000003)

---
Certificate chain
0 s:/OU=Example Unit/CN=example.com
i:/C=US/ST=Massachusetts/L=Cambridge/O=Intermediate
Authority/OU=http://certificates.intermediateauth...N=Intermediate Certification
Authority/sn=675637734
-----BEGIN CERTIFICATE-----
...lots of b64...
-----END CERTIFICATE-----
---
Server certificate
subject=/OU=Example Unit/CN=example.com
issuer=/C=US/ST=Massachusetts/L=Cambridge/O=Intermediate
Authority/OU=http://certificates.intermediateauth...N=Intermediate Certification
Authority/sn=675637734
---
No client certificate CA names sent
---
SSL handshake has read 1509 bytes and written 573 bytes
---
New, TLSv1/SSLv3, Cipher is AES256-SHA
Server public key is 2048 bit
Secure Renegotiation IS NOT supported
Compression: NONE
Expansion: NONE
SSL-Session:
Protocol : TLSv1
Cipher : AES256-SHA
Session-ID: 24B45B2D5492A6C5D2D5AC470E42896F9D2DDDD54EF6E3363B7FDA28AB32414B
Session-ID-ctx:
Master-Key:
21BAF9D2E1525A5B935BF107DA3CAF691C1E499286CBEA987F64AE5F603AAF8E65999BD21B06B116FE9968FB7C62EF7C

Key-Arg : None
Krb5 Principal: None
PSK identity: None
PSK identity hint: None
Start Time: 1476711760
Timeout : 300 (sec)
Verify return code: 21 (unable to verify the first certificate)
---
```

This output shows that the server only provided one certificate, and the provided certificate was signed by an intermediate authority, not a trusted root. The output also shows the characteristic verification errors.

Remediation

This problem is caused by a misconfigured certificate presented by the device. The only way to fix this so that Security Cloud Control or any other program can securely connect to the device is to load the correct certificate chain onto the device, so that it will present a complete certificate chain to connecting clients.

To include the intermediate CA to the trustpoint follow one of the links below (depending on your case - if CSR was generated on the ASA or not):

- https://www.cisco.com/c/en/us/support/docs/security-vpn/public-key-infrastructure-pki/200339-Configure-ASA-SSL-Digital-Certificate-I.html#anc13

- https://www.cisco.com/c/en/us/support/docs/security-vpn/public-key-infrastructure-pki/200339-Configure-ASA-SSL-Digital-Certificate-I.html#anc15

New Certificate Detected

If you upgrade a device that has a self-signed certificate and a new certificate is generated after the upgrade process, Security Cloud Control may generate a "New Certificate Detected" message as both a **Configuration Status** and **Connectivity** status. You must manually confirm and resolve this issue before you can continue managing it from Security Cloud Control. Once the certificate is synchronized and the device is in a healthy state, you can manage the device.

Use the following procedure to resolve a new certificate:

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab.

Step 4 Click the appropriate device type tab.

Step 5 Use the filter to display devices with a **New Certificate Detected** connectivity or configuration status and select the desired device.

Step 6 In the action pane, click **Review Certificate**. Security Cloud Control allows you to download the certificate for review and accept the new certificate.

Step 7 In the Device Sync window, click **Accept** or in the Reconnecting to Device window, click **Continue**.

Security Cloud Control automatically synchronizes the device with the new self-signed certificate. You may have to manually refresh the page to see the device once it's synced.

Troubleshoot Onboarding Error

The device onboarding error can occur for various reasons.

You can take the following actions:

Procedure

Step 1 On the **Inventory** page, click the **Devices** tab.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the appropriate device type tab and select the device running into this error. In some cases, you will see the error description on the right. Take the necessary actions mentioned in the description.

Or

Step 4 Remove the device instance from Security Cloud Control and try onboarding the device again.

Resolve the conflict detected status

Security Cloud Control allows you to enable or disable conflict detection on each live device. If Conflict Detection, on page 610 is enabled and there was a change made to the device's configuration without using Security Cloud Control, the device's configuration status will show **Conflict Detected**.

To resolve a **Conflict Detected** status, follow this procedure:

Procedure

Step 1 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the appropriate device type tab.

Step 4 Select the device reporting the conflict and click **Review Conflict** in the details pane on the right.

Step 5 In the **Device Sync** page, compare the two configurations by reviewing the highlighted differences.

- The panel labeled "Last Known Device Configuration" is the device configuration stored on Security Cloud Control.
- The panel labeled "Found on Device" is the configuration stored in the running configuration on the ASA.

Step 6 Resolve the conflict by selecting one of the following:

- **Accept Device changes**: This will overwrite the configuration **and any pending changes stored on** Security Cloud Control with the device's running configuration.

  Note
  As Security Cloud Control does not support deploying changes to the Cisco IOS devices outside of the command line interface, your only choice for a Cisco IOS device will be to select **Accept Without Review** when resolving the conflict.

- **Reject Device Changes**: This will overwrite the configuration stored on the device with the configuration stored on Security Cloud Control.

Note
All configuration changes, rejected or accepted, are recorded in the change log.

Resolve the Not Synced Status

Use the following procedure to resolve a device with a "Not Synced" Configuration Status:

Procedure

Step 1 Choose **Inventory**.

Note
For an On-Premises Firewall Management Center, navigate **Tools & Services** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 2 Choose **Security Devices**.

Note
For an On-Premises Firewall Management Center, click **Administration** > **Integrations** > **Firewall Management Center** and select the FMC that is in **Not Synced** state and continue from Step 5.

Step 3 Click the **Devices** tab to locate the device or the **Templates** tab to locate the model device.

Step 4 Click the appropriate device type tab.

Step 5 Select the device reported as Not Synced.

Step 6 In the **Not synced** panel to the right, select either of the following:

- **Preview and Deploy...** -If you want to push the configuration change from Security Cloud Control to the device, preview and deploy the changes you made now, or wait and deploy multiple changes at once.
- **Discard Changes** -If you do **not** want to push the configuration change from Security Cloud Control to the device, or you want to "undo" the configuration changes you started making on Security Cloud Control. This option overwrites the configuration stored in Security Cloud Control with the running configuration stored on the device.

Troubleshoot Unreachable Connection State

The device may be in "unreachable" for various reasons:

Procedure

Step 1 In the left pane, click **Security Devices**.

Step 2 Click the **Devices** tab to locate your device.

Step 3 Click the appropriate device type tab and select the device in the **Unreachable** state.

Step 4 Click **Reconnect.**

Step 5 Take one of these actions based on the message appearing on the right:

a. If you have onboarded the FDM-managed device using the IP address and device credentials, the following message appears:

"*This device is unreachable, review the IP address and port*," enter the new IP address and/or new port information of the device in the message box. It is likely that because Security Cloud Control attempted to connect to an invalid IP address, the IP address for the device was changed directly on the device.

Note
If the device was rebooted, and there are no other pending changes, the device should return to an online connection state, and no further action is needed.

You may now see that the device is "Online", but the configuration state is "Conflict Detected." Use Resolve Configuration Conflicts, to review the configuration differences between Security Cloud Control and the device.

b. If you are onboarding the FDM-managed device using the registration token or serial number, the following message appears:

"*This device has been deleted from Cisco Cloud. The deletion could be caused as part of the Return Material Authorization (RMA) process*". It means that the faulty device that you have returned to the RMA team has been deleted from Cisco Cloud as a part of the RMA process.

As a result, you'll see that the device Connectivity status is "Unreachable" in Security Cloud Control.

- For the RMA case, you need to perform the following steps in Security Cloud Control:

  1. If the device was successfully onboarded, you need to save the device configuration as a template.

     Remove the device instance from Security Cloud Control.

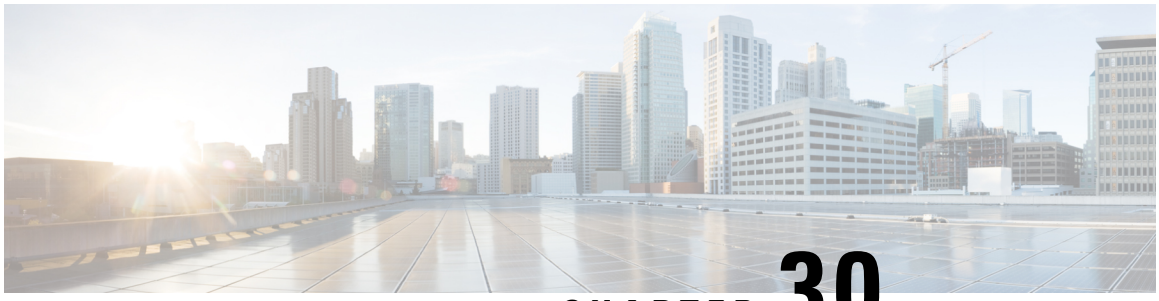
  2. Power on the new replacement device that you have received from the RMA team and onboard it to Security Cloud Control.

     Important
     The replacement device will probably have a different serial number and needs to be onboarded as a new device.

     You'll now see that the device is "Online", but the configuration state is "Conflict Detected."

  3. Use Resolve Configuration Conflicts, to review the configuration differences between Security Cloud Control and the device.

- If you have sold the device or transferred its ownership to another user outside of your tenant without erasing the device's configuration, you will no longer possess the device. This error occurs when the buyer reimages the device. If the device was configured correctly and synced earlier, you can save the device configuration as a template and then remove the device instance from Security Cloud Control.



CHAPTER 30

FAQ and support

This chapter contains the following sections:

- Security Cloud Control, on page 849
- FAQ about onboarding devices to Security Cloud Control, on page 850
- Device types, on page 851
- Security, on page 853
- Troubleshooting, on page 853
- How do I transfer a Firewall Threat Defense device to a new or existing Security Cloud Control organization?, on page 854
- Terminologies and definitions used in Zero-Touch Provisioning, on page 854
- Policy optimization, on page 855
- Connectivity, on page 855
- Complete the initial configuration of a Secure Firewall Threat Defense device using the CLI, on page 856
- What does it mean to be FedRAMP certified, on page 859
- About Data Interfaces, on page 860
- How Security Cloud Control processes personal information, on page 860
- Contact Security Cloud Control support, on page 860

Security Cloud Control

What is Security Cloud Control?

Security Cloud Control (formerly Cisco Defense Orchestrator) is a cloud-based multi-device manager that allows network administrators to create and maintain consistent security policies across various security devices.

You can use Security Cloud Control to manage these devices:

- Cisco Secure Firewall ASA
- Cisco Secure Firewall Threat Defense
- Cisco IOS devices

Security Cloud Control administrators can monitor and maintain all these device types through a single interface.

FAQ about onboarding devices to Security Cloud Control

FAQs About Onboarding Secure Firewall ASA to Security Cloud Control

How do I onboard an ASA using credentials?

You can onboard ASAs one at a time or in a bulk operation. device at a time. When onboarding an ASA that is part of a high-availability pair, use Onboard an ASA Device to onboard only the primary device of the pair. The method of onboarding a security context or admin context is the same for onboarding any other ASA.

How do I onboard more than one ASA at a time?

You can create a list of ASAs using a CSV file, and Security Cloud Control will onboard all the ASAs in the list. See Onboard ASAs in Bulk for instructions on how to bulk onboard ASAs.

What do I do after onboarding my ASAs?

See Managing ASA with Security Cloud Control to get started.

FAQs About Onboarding Secure Firewall Threat Defense to Cloud-Delivered Firewall Management Center

How do I onboard Secure Firewall Threat Defense?

You can onboard an FTD device using a CLI registration key, through zero-touch provisioning, or with a serial number.

What do I do after onboarding my Secure Firewall Threat Defense?

Once the device is sychronized, navigate to **Administration** > **Integrations** > **Firewall Management Center** and select an action from the Actions, Management, or Settings pane to begin configuring your threat defense device in Cloud-Delivered Firewall Management Center. See Cloud-delivered Firewall Management Center Application Page to get started.

How do I troubleshoot my Secure Firewall Threat Defense?

See Troubleshoot Onboarding Secure Firewall Threat Defense.

FAQs About on-premises Firewall Management Center

How do I onboard an on-premises Firewall Management Center?

You can onboard an on-premises Firewall Management Center to Security Cloud Control. Onboarding an on-premises Firewall Management Center also onboards all the devices registered to on-premises Firewall Management Center. Security Cloud Control does not support creating or modifying objects or policies associated with on-premises Firewall Management Center or the devices registered to on-premises Firewall

Management Center. You must make these changes in the on-premises Firewall Management Center UI. For more information, see Onboard an On-Prem Management Center.

FAQs About Onboarding SSH Devices to Security Cloud Control

How do I onboard an SSH device?

You can use the username and password of a highly privileged user stored on the SSH device to onboard the device with a Secure Device Connector (SDC). See Onboard an SSH Device to get started.

How do I delete a device?

You can delete a device from the inventory page.

You can delete a device from the **Security Devices** page.

Device types

What is an Adaptive Security Appliance (ASA)?

The Cisco ASA provides advanced stateful firewall and VPN concentrator functionality in one device as well as integrated services with add-on modules. The ASA includes many advanced features, such as multiple security contexts (similar to virtualized firewalls), clustering (combining multiple firewalls into a single firewall), transparent (Layer 2) firewall or routed (Layer 3) firewall operation, advanced inspection engines, IPsec VPN, SSL VPN, and clientless SSL VPN support, and many more features. ASAs can be installed on virtual machines or supported hardware.

What is an ASA Model?

An ASA model is a copy of the running configuration file of an ASA device that you have onboarded to Security Cloud Control. You can use an ASA model to analyze the configuration of an ASA device without onboarding the device itself.

What is Firepower Threat Defense (FTD)

Cisco's next generation firewall software image. It strives to combine the best of Sourcefire next generation firewall services and the ASA platform. It can be installed on a number of different Firepower hardware devices or virtual machines. This is not the same as a ASA FirePOWER module.

What is Firepower Device Manager (FDM)

Firepower Device Manager is Firepower Threat Defense management software delivered with the FTD image. FDM is designed to manage the one FTD it is delivered with. You may also hear FDM referred to as the "local device manager."

What is Firepower?

Firepower is a general term that refers to a group of next generation firewall hardware and software.

When is a device Synced?

When the configuration on Security Cloud Control and the configuration stored locally on the device are the same.

When is a device Not Synced?

When the configuration stored in Security Cloud Control was changed and it is now different that the configuration stored locally on the device.

When is a device in a Conflict Detected state?

When the configuration on the device was changed outside of Security Cloud Control (out-of-band), and is now different than the configuration stored on Security Cloud Control.

What is an out-of-band change?

When a change is made to the device outside of Security Cloud Control. The change is made directly on the device using CLI command or by using the on-device manager such as ASDM or FDM. An out-of-band change causes Security Cloud Control to report a "Conflict Detected" state for the device.

What does it mean to deploy a change to a device?

After you onboard a device to Security Cloud Control, Security Cloud Control maintains a copy of its configuration. When you make a change on Security Cloud Control, Security Cloud Control makes a change to its copy of the device's configuration. When you "deploy" that change back to a device, Security Cloud Control copies the changes you made to the device's copy of its configuration. See these topics:

- Preview and deploy configuration changes for all devices, on page 597
- Deploy Configuration Changes from Security Cloud Control to FTD
- Deploy Configuration Changes from Security Cloud Control to an ASA

What ASA commands are currently supported?

All commands. Click the **Command Line Interface** link under Device Actions to use the ASA CLI.

Are there any scale limitations for device management?

Security Cloud Control's cloud architecture allows it to scale to thousands of devices.

Does Security Cloud Control manage Cisco Integrated Services Routers and Aggregation Services Routers?

Security Cloud Control allows you to create a model device for ISRs and ASRs and import its configuration. You can then create templates based on the imported configurations and export the configuration as a standardized configuration that can be deployed to new or existing ISR and ASR devices for consistent security.

Can Security Cloud Control manage SMA?

No, Security Cloud Control does not currently manage SMA.

Security

I received the error "Could not validate your OTP" when logging into Security Cloud Control for the first time

Check that your desktop or mobile device clock is synchronized with a world time server. Clocks being out of sync by less or more than a minute can cause incorrect OTPs to be generated.

Is my device connected directly to Security Cloud Control cloud platform?

Yes. The secured connection is performed using the Security Cloud Control SDC which is used as a proxy between the device and Security Cloud Control platform. Security Cloud Control architecture, designed with security first in mind, enables having complete separation between data traversing back and forth to the device.

How can I connect a device which does not have a public IP address?

You can leverage Security Cloud Control Secure Device Connector (SDC) which can be deployed within your network and doesn't need any outside port to be open. Once the SDC is deployed you can onboard devices with internal (non-internet routable) IP addresses.

Does the SDC require any additional cost or license?

No.

How can I check the tunnel status? State options

Security Cloud Control performs the tunnel connectivity checks automatically every hour, however ad-hoc VPN tunnel connectivity checks can be performed by choosing a tunnel and requesting to check connectivity. Results may take several seconds to process.

Can I search a tunnel based on the device name as well as its IP address of one of its peers?

Yes. Search and pivot to a specific VPN tunnel details by using available filters and search capabilities on both name and the peers IP addresses.

Troubleshooting

While performing complete deploy of device configuration from Security Cloud Control to managed device, I get a warning "Cannot deploy changes to device". What can I do to solve that?

If an error occurrs when you deploy a full configuration (changes performed beyond Security Cloud Control supported commands) to the device, click "Check for changes" to pull the latest available configuration from device. This may solve the problem and you will be able to continue making changes on Security Cloud Control and deploy them. In case the issue persist, please contact Cisco TAC from the **Contact Support** page.

While resolving out-of-band issue (changes performed outside of Security Cloud Control; directly to a device), comparing the configuration present in Security Cloud Control that of the device, Security Cloud Control presents additional metadata that were not added or modified by me. Why?

As Security Cloud Control expands its functionality, additional information will be collected from the device's configuration to enrich and maintain all required data for better policy and device management analysis. These are not changes that occurred on managed device but already existing information. Resolving the conflict detected state can be easily solved by checking for changes from the device and reviewing the changes occurred.

How do I transfer a Firewall Threat Defense device to a new or existing Security Cloud Control organization?

To transfer a Firewall Threat Defense device to a new or existing Security Cloud Control organization, follow these steps:

1. Ensure that all pending changes are downloaded to the Firewall Threat Defense device so that the latest changes are available on it.
2. Remove the Firewall Threat Defense device from the source Security Cloud Control organization.
3. (optional) Create a new Security Cloud Control organization in the desired region by using Security Cloud Control Provisioning Portal and enable Cloud-delivered Firewall Management Center on it. Skip this step if the target Security Cloud Control organization already exists.
4. Onboard the Firewall Threat Defense device to the new Security Cloud Control organization using the CLI registration key method.

Terminologies and definitions used in Zero-Touch Provisioning

- **Claimed** - Used in the context of serial number onboarding in Security Cloud Control. A device is "claimed" if its serial number has been onboarded to a Security Cloud Control tenant.
- **Parked** - Used in the context of serial number onboarding in Security Cloud Control. A device is "parked" if it has connected to the Cisco Cloud, and a Security Cloud Control tenant has not claimed its serial number.
- **Initial provisioning** - Used in the context of the initial FTD setup. During this phase, the device accepts EULA, creates a new password, configures management IP address, sets FQDN, sets DNS servers, and chooses to manage the device locally with FDM.
- **Zero-Touch Provisioning** - It is the process of shipping an FTD from the factory to a customer site (typically a branch office), an employee at the site connects the FTD to their network, and the device contacts the Cisco Cloud. At that point, the device is onboarded to Security Cloud Control tenant if its serial number has already been "claimed," or the FTD is "parked" in the Cisco cloud until a Security Cloud Control tenant claims it.

Policy optimization

How can I identify a case when two or more access lists (within the same access group) are shadowing each other?

Security Cloud Control Network Policy Management (NPM) is able to identify and alert the user if within a rule set, a rule higher in order, is shadowing a different rule. User can either navigate between all network policies or filter to identify all shadow issues.



Note Security Cloud Control supports only fully shadowed rules.

Connectivity

The Secure Device Connector changed IP address, but this was not reflected within Security Cloud Control. What can I do to reflect the change?

In order to obtain and update the new Secure Device Connector (SDC) within Security Cloud Control, you will need to restart the container using the following commands:

```
 Stop Docker deamon>#service docker stop
Change IP address
Start Docker deamon >#service docker start
Restart container on the SDC virtual appliance >bash-4.2$ ./cdo/toolkit/toolkit.sh restartSDC
 <tenant-name>
```

What happens if the IP address used by Security Cloud Control to manage my devices (FTD or ASA) changes?

If the IP address of the device changes for any reason, whether it is a change in the static IP address or a change in the IP address due to DHCP, you can change the IP address that Security Cloud Control uses to connect to the device and then reconnect the device . When reconnecting the device you will be asked to enter the new IP address of the device as well as re-enter the authentication credentials.

What networking is required to connect my ASA to Security Cloud Control?

- ASDM image present and enabled for ASA.
- Public interface access to 52.25.109.29, 52.34.234.2, 52.36.70.147
- ASA's HTTPS port must be set to 443 or to a value of 1024 or higher. For example, it cannot be set to port 636.
- If the ASA under management is also configured to accept AnyConnect VPN Client connections, the ASA HTTPS port must be changed to a value of 1024 or higher.

Complete the initial configuration of a Secure Firewall Threat Defense device using the CLI

Connect to the device's CLI to perform initial setup, including setting the management IP address, gateway, and other basic networking settings using the setup wizard. Ensure all DNS and firewall ports are accessible for communication.

The dedicated management interface is a special interface with its own network settings. If you do not want to use the management interface, you can use the CLI to configure a data interface instead.

This configuration is ideal for devices that are going to be onboarded with their CLI registration key.

Note Do **not** use this configuration procedure for devices that are onboarding with zero-touch provisioning.

Procedure

Step 1 Connect to the device's CLI, either from the console port or using SSH to the management interface. If you intend to change the network settings, we recommend using the console port so you do not get disconnected.

(Firepower hardware models) The console port connects to the FXOS CLI. The SSH session connects directly to the Firewall Threat Defense CLI.

Step 2 Log in with the username **admin** and the password **Admin123** .

At the console port, you connect to the FXOS CLI. The first time you log in to FXOS, you are prompted to change the password. This password is also used for the Firewall Threat Defense login for SSH.

Note
If the password was already changed, and you do not know it, you must reimage the device to reset the password to the default.

For Firepower and Secure Firewall hardware, see the Reimage Procedures in the Cisco FXOS Troubleshooting Guide for the Firewall Threat Defense .

For the ISA 3000, see the Cisco Secure Firewall ASA and Threat Defense Reimage Guide .

Example:

```
firepower login:
                        admin
Password:
                        Admin123
Successful login attempts for user 'admin' : 1
[...]
Hello admin. You must change your password.
Enter new password:
                        ********
Confirm new password:
                        ********
Your password was updated successfully.
```

```
[...]
firepower#
```

Step 3 If you connected to FXOS on the console port, connect to the Firewall Threat Defense CLI.

connect ftd

Example:

```
firepower# connect ftd
>
```

Step 4 The first time you log in to the device, you are prompted to accept the End User License Agreement (EULA) and, if using an SSH connection, to change the admin password. You are then presented with the CLI setup script.

Note
You cannot repeat the CLI setup wizard unless you clear the configuration; for example, by reimaging. However, all of these settings can be changed later at the CLI using **configure network** commands. See the threat defense command reference.

Defaults or previously entered values appear in brackets. To accept previously entered values, press **Enter**.

Note
The management interface settings are used even when you enable Firewall Threat Defense access on a data interface. For example, the management traffic that is routed over the backplane through the data interface will resolve FQDNs using the management interface DNS servers, and not the data interface DNS servers.

See the following guidelines:

- **Configure IPv4 via DHCP or manually?**—If you want to use a data interface for Firewall Threat Defense access instead of the management interface, choose **manual**. Although you do not plan to use the management interface, you must set an IP address, for example, a private address. You cannot configure a data interface for management if the management interface is set to DHCP, because the default route, which must be **data-interfaces** (see the next bullet), might be overwritten with one received from the DHCP server.
- **Enter the IPv4 default gateway for the management interface**—If you want to use a data interface for Firewall Threat Defense access instead of the management interface, set the gateway to be **data-interfaces**. This setting forwards management traffic over the backplane so it can be routed through the FMC access data interface.
- **If your networking information has changed, you will need to reconnect**—If you are connected with SSH but you change the IP address at initial setup, you will be disconnected. Reconnect with the new IP address and password. Console connections are not affected.
- **Manage the device locally?**—Enter **YES** to configure the device for the device to be managed by either the Cloud-Delivered Firewall Management Center or Secure Firewall Device Manager.

  Manage the device locally?—Enter **NO** to configure the device for remote management with the on-premises Firewall Management Center.
- **Configure firewall mode?**—We recommend that you set the firewall mode at initial configuration. Changing the firewall mode after initial setup erases your running configuration. Note that data interface Firewall Threat Defense access is only supported in routed firewall mode.

Step 5 (Optional) Configure a data interface for Firewall Management CenterCloud-Delivered Firewall Management Center access.

configure network management-data-interface

You are then prompted to configure basic network settings for the data interface.

Note
You should use the console port when using this command. If you use SSH to the Management interface, you might get disconnected and have to reconnect to the console port. See below for more information about SSH usage.

See the following details for using this command. See About Data Interfaces, on page 860 for more informatio.

- The original management interface cannot use DHCP if you want to use a data interface for management. If you did not set the IP address manually during initial setup, you can set it now using the **configure network** {**ipv4** | **ipv6**} **manual** command. If you did not already set the management interface gateway to **data-interfaces**, this command will set it now.
- When you onboard the device for Firewall Threat Defense management through Security Cloud Control, Security Cloud Control discovers and maintains the interface configuration, including the following settings: interface name and IP address, static route to the gateway, DNS servers, and DDNS server. For more information about the DNS server configuration, see below. You can later make changes to the access interface configuration, but make sure you don't make changes that can prevent the device or Security Cloud Control from re-establishing the management connection. If the management connection is disrupted, the device includes the **configure policy rollback** command to restore the previous deployment.
- This command sets the *data* interface DNS server. The Management DNS server that you set with the setup script (or using the **configure network dns servers** command) is used for management traffic. The data DNS server is used for DDNS (if configured) or for security policies applied to this interface.

  Also, local DNS servers are only retained if the DNS servers were discovered at initial registration. For example, if you registered the device using the Management interface, but then later configure a data interface using the **configure network management-data-interface** command, then you must manually configure all of these settings in Security Cloud Control, including the DNS servers, to match the device configuration.
- You can change the management interface after you onboard the Firewall Threat Defense for Firewall Threat Defense management through , to either the management interface or another data interface.
- The FQDN that you set in the setup wizard will be used for this interface.
- You can clear the entire device configuration as part of the command; you might use this option in a recovery scenario, but we do not suggest you use it for initial setup or normal operation.
- To disable data managemement, enter the **configure network management-data-interface disable** command.

Example:

```
> configure network management-data-interface
Data interface to use for management: ethernet1/1
Specify a name for the interface [outside]:
IP address (manual / dhcp) [dhcp]:
DDNS server update URL [none]:
https://jcrichton:pa$$w0rd17@domains.example.com/nic/update?hostname=<h>&myip=<a>
```

```
Do you wish to clear all the device configuration before applying ? (y/n) [n]:

Configuration done with option to allow FMC access from any network, if you wish to change
 the FMC access network
use the 'client' option in the command 'configure network management-data-interface'.

Setting IPv4 network configuration.
Network settings changed.

>
```

Example:

```
> configure network management-data-interface
Data interface to use for management: ethernet1/1
Specify a name for the interface [outside]: internet
IP address (manual / dhcp) [dhcp]: manual
IPv4/IPv6 address: 10.10.6.7
Netmask/IPv6 Prefix: 255.255.255.0
Default Gateway: 10.10.6.1
Comma-separated list of DNS servers [none]: 208.67.222.222,208.67.220.220
DDNS server update URL [none]:
Do you wish to clear all the device configuration before applying ? (y/n) [n]:

Configuration done with option to allow FMC access from any network, if you wish to change
 the FMC access network
use the 'client' option in the command 'configure network management-data-interface'.

Setting IPv4 network configuration.
Network settings changed.

>
```

Step 6 (Optional) Limit data interface access to Security Cloud Control on a specific network.

configure network management-data-interface client *ip_address netmask*

By default, all networks are allowed.

What does it mean to be FedRAMP certified

Being "FedRAMP certified" means that a cloud service provider (CSP) has undergone a rigorous security assessment and authorization process as defined by the Federal Risk and Authorization Management Program (FedRAMP). This certification ensures that the CSP meets stringent security standards required for handling sensitive government data. The key aspects of being FedRAMP certified include:

1. **Standardized Security Assessment**: The CSP has been evaluated against a standardized set of security requirements and assessment procedures.
2. **Authorization**: The CSP has received an official authorization to operate (ATO) from a federal agency.
3. **Continuous Monitoring**: The CSP is required to continuously monitor and report on their security controls to maintain their FedRAMP Authorized status.
4. **Compliance**: The certification ensures that the CSP complies with federal regulations for cloud services, providing a high level of security assurance for government agencies and contractors.

Overall, FedRAMP certification signifies that the cloud service provider has implemented strong security measures to protect customer data and is in compliance with federal security mandates.

Learn more at What is FedRAMP.

About Data Interfaces

You can use either the dedicated management interface or a regular data interface for communication with the device. Security Cloud Control access on a data interface is useful if you want to manage the FTD remotely from the outside interface, or you do not have a separate management network. Security Cloud Control supports high availability on the FTD managed remotely from the data interface.

FTD management access from a data interface has the following limitations:

- You can only enable manager access on one physical, data interface. You cannot use a subinterface or EtherChannel.
- Routed firewall mode only, using a routed interface.
- PPPoE is not supported. If your ISP requires PPPoE, you will have to put a router with PPPoE support between the FTD and the WAN modem.
- The interface must be in the global VRF only.
- SSH is not enabled by default for data interfaces, so you will have to enable SSH later using Security Cloud Control. Because the management interface gateway will be changed to be the data interfaces, you also cannot SSH to the management interface from a remote network unless you add a static route for the management interface using the **configure network static-routes** command.

How Security Cloud Control processes personal information

To learn how Security Cloud Control processes your personal identifiable information, see the Security Cloud Control Privacy Data Sheet.

Contact Security Cloud Control support

This chapter covers the following sections:

Export The Workflow

We strongly recommend exporting the workflow of a device that is experience issues prior to opening a support ticket. This additional information can help the support team expeditiously identify and correct any troubleshooting efforts.

Use the following procedure to export the workflow:

Procedure

Step 1 In the navigation bar, click **Inventory**.

Step 2 In the left pane, click **Security Devices**.

Step 3 Click the **Devices** tab to locate your device.

Step 4 Click the appropriate device type tab and select the device you need to troubleshoot.

Use the **filter** or **search bar** to locate the device you need to troubleshoot. Select the device so it is highlighted.

Step 5 In the **Device Actions** pane, select **Workflows**.

Step 6 Click the **Export** button located at the top right of the page, above the table of events. The file automatically saves locally as a **.json** file. Attach this to any emails or tickets you open with TAC.

Open a Support Ticket with TAC

A customer using a 30-day trial or a licensed Security Cloud Control account can open a support ticket with Cisco's Technical Assistance Center (TAC).

- How Security Cloud Control Customers Open a Support Ticket with TAC.
- How Security Cloud Control Trial Customers Open a Support Ticket with TAC.

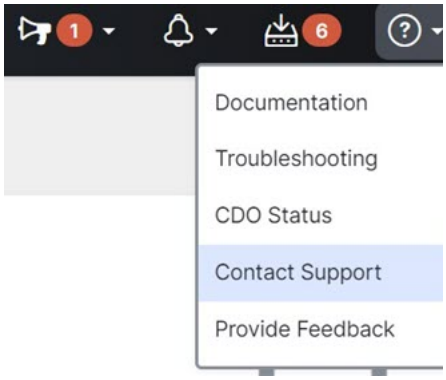
How Security Cloud Control Customers Open a Support Ticket with TAC

This section explains how a customer using a licensed Security Cloud Control tenant can open a support ticket with Cisco's Technical Assistance Center (TAC).

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Next to your tenant name, click the help button and select **Contact Support**.



Step 3 Click **Support Case Manager**.

Step 4 Click the blue **Open New Case** button.

Step 5 Click **Open Case**.

Step 6 Select **Products and Services** and then click **Open Case**.

Step 7 Choose a **Request Type**.

Step 8 Expand **Find Product by Service Agreement** row.

Step 9 Fill in all the fields. Many of the fields are obvious. This is some additional information:

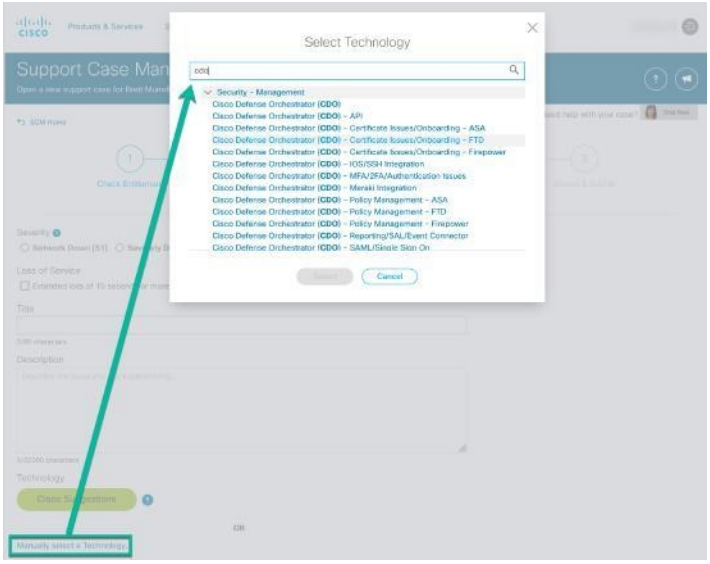
- **Product Name (PID)** - If you no longer have this number, see the Security Cloud Control Data Sheet.
- **Product Description** - This is the description of the PID.
- **Site Name** - Enter your site name. If you are a Cisco Partner opening a case for one of your customers, enter the customer's name.
- **Service Contract** - Enter your service contract number.
  - **Important**: In order for your case to be associated with your Cisco.com account, you need to associate your contract number to your Cisco.com profile. Use this procedure to associate your contract number to your Cisco.com profile.
    a. Open to Cisco Profile Manager.
    b. Click the **Access Management** tab.
    c. Click **Add Access**.
    d. Choose **TAC and RMA case creation, Software Download, support tools, and entitled content on Cisco.com** and click **Go**.
    e. Enter service contracts number(s) in the space provided and click **Submit**. You will receive notification via email that the service contract associations have been completed. Service contract association can take up to 6 hours to complete.

Important
Important: If you are not able to access any of the links below, please contact your authorized Cisco partner or re-seller, your Cisco account representative, or the individual in your company who manages Cisco service agreement information.

Step 10 Click **Next.**

Step 11 In the **Describe Problem** screen, scroll down to **Manually select a Technology**, click it, and type **Security Cloud Control** in the search field.

Step 12 Select the category that best matches your request, and click **Select**.



Step 13 Complete the remainder of the service request and click **Submit**.

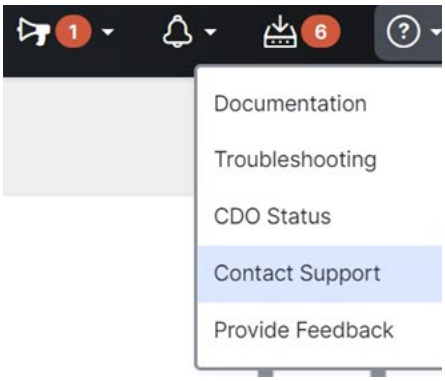
How Security Cloud Control Trial Customers Open a Support Ticket with TAC

This section explains how a customer using a free trial of a Security Cloud Control tenant can open a support ticket with Cisco's Technical Assistance Center (TAC).

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Next to your tenant and account name, click the help button and select **Contact Support**.



Step 3 In the **Enter Issue or request below** field, specify the issue that you are facing or your request and click **Submit**.

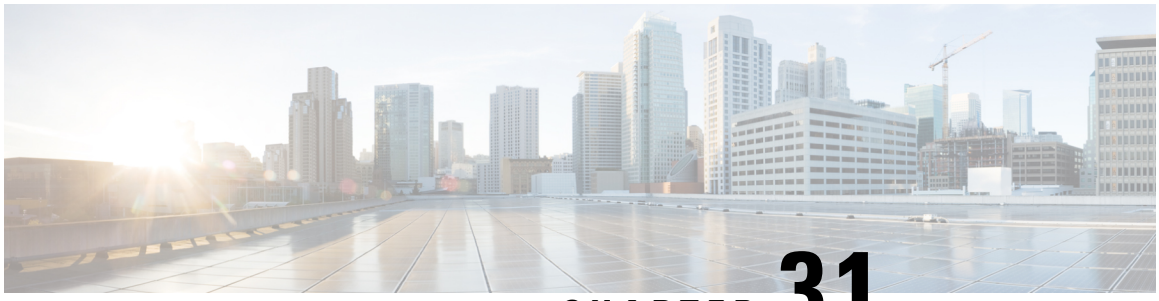
Your request, along with the technical information, will be sent to the support team, and a technical support engineer will respond to your query.

Security Cloud Control Service Status Page

Security Cloud Control maintains a customer-facing service status page that shows you if the Security Cloud Control service is up and any service interruptions it may have had. You can view up-time information with daily, weekly, or monthly graphs.

You can reach the Security Cloud Control status page by clicking **Security Cloud Control Status** in the help menu on any page in Security Cloud Control.

On the status page, you can click the **Subscribe to Updates** to receive a notification if the Security Cloud Control service goes down.



CHAPTER 31

Security and Internet Access

Lists of URLs used by the dynamic attributes connector when communicating with cloud service providers and the .

- Recommendation: security requirements for network deployment, on page 865
- Internet access requirements, on page 865

Recommendation: security requirements for network deployment

Install the dynamic attributes connector on a protected internal network. Although the dynamic attributes connector is configured to have only the necessary services and ports available, you must make sure that attacks cannot reach it.

If the dynamic attributes connector and the reside on the same network, you can connect the to the same protected internal network as the dynamic attributes connector.

Take steps to ensure that communications between appliances cannot be interrupted, blocked, or tampered with. Regardless of how you deploy your appliances, inter-system communication is encrypted. However, you must still protect against distributed denial of service (DDoS) or adversary-in-the-middle attacks.

Internet access requirements

By default, the dynamic attributes connector is configured to communicate with the Firepower System over the internet using HTTPS on port 443/tcp (HTTPS). If you do not want the dynamic attributes connector to have direct access to the internet, you can configure a proxy server.

This information details the URLs the dynamic attributes connector use to communicate with the and with external servers.

Table 42: Dynamic Attributes Connector access requirements

URL	Reason
https://*fmc-ip***/api/fmc_platform/v1/auth/generatetoken**	Authentication
https://*fmc-ip***/api/fmc_config/v1/domain/***domain-id***/object/dynamicobjects**	GET and POST dynamic objects

URL	Reason
https://*fmc-ip***/api/fmc_config/ v1/domain/***domain-id***/object/dynamicobjects/***object-id***/mappings?action=add**	Add mappings
https://*fmc-ip***/api/fmc_config/ v1/domain/***domain-id* **/object/dynamicobjects/***object-id***/mappings?action=remove**	Remove mappings

Migration from DockerHub to Amazon ECR

Docker images for the Dynamic Attributes Connector are being migrated from Docker Hub to Amazon Elastic Container Registry (Amazon ECR).

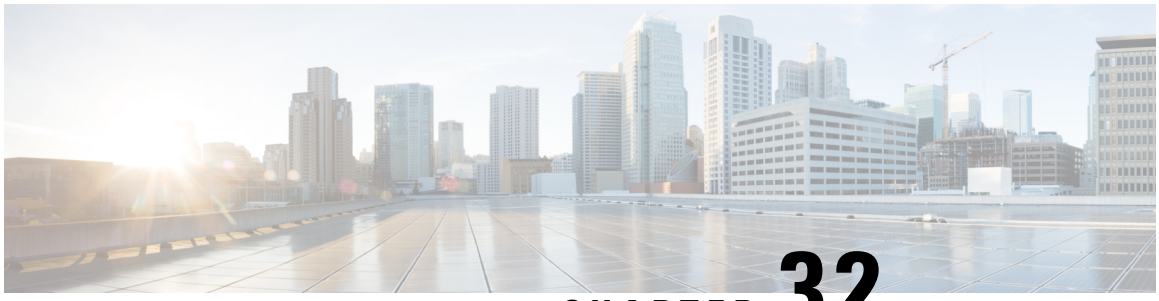
To use the new field packages, you must allow access through your firewall or proxy to all of the following URLs:

- https://public.ecr.aws
- https://csdac-cosign.s3.us-west-1.amazonaws.com
- https://d2glxqk2uabbnd.cloudfront.net
- https://d5l0dvt14r5h8.cloudfront.net

  For more information about Amazon Cloudfront URLs, see EKS Anywhere documentation.

Dynamic Attributes Connector Azure access requirements

The dynamic attributes connector calls built-in SDK methods to GET instance information. These methods internally call https://login.microsoft.com (for authentication) and https://management.azure.com (to GET instance information).



CHAPTER 32

Terraform

This chapter explains how to set up and manage Security Cloud Control.

- About Terraform, on page 867

About Terraform

Security Cloud Control customers can use the Security Cloud Control Terraform provider and Security Cloud Control Terraform modules to rapidly set up their tenants using code that is repeatable and version-controlled. The Security Cloud Control Terraform provider allows users to do the following:

- **Manage** users
- **Onboard** Secure Firewall Threat Defense devices on Cloud-Delivered Firewall Management Centers, Cisco Secure ASA devices, and iOS devices
- **Onboard** secure device connectors on vSphere and AWS
- **Onboard** secure event connectors on AWS

For more information, refer to the following pages:

- Security Cloud Control Terraform Provider page
- Security Cloud Control SDC on vSphere module page
- Security Cloud Control SDC on AWS module page
- Security Cloud Control SEC on AWS module page
- Work through the Devnet learning lab
- Automating Security Infrastructure Management Using the Security Cloud Control Terraform Provider - Learning Lab
- Security Cloud Control automation examples on GitHub

Support

The Security Cloud Control Terraform provider and modules are published as Open Source Software under the Apache 2.0 license. Please file issues on GitHub in the repositories below if you require support:

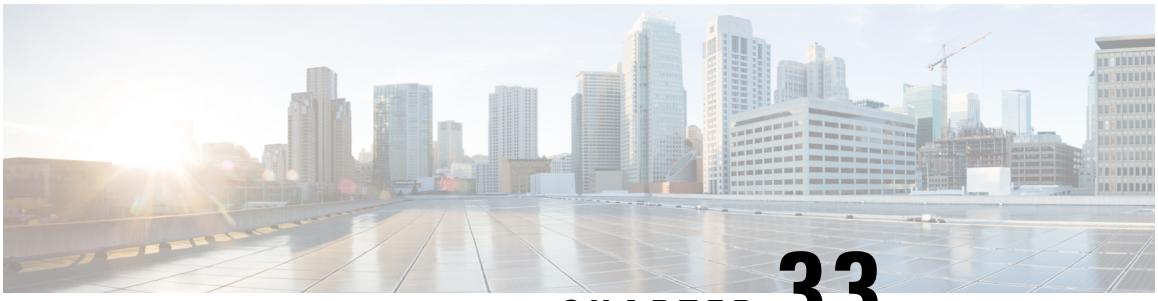
Module	Repository
Security Cloud Control Terraform Provider	https://github.com/ciscodevnet/terraform-provider-SecurityCloud Control
Security Cloud Control SDC Module (vSphere)	https://github.com/CiscoDevNet/terraform-vsphere-SecurityCloud Control-sdc
Security Cloud Control SDC Module (AWS)	https://github.com/CiscoDevNet/terraform-aws-SecurityCloud Control-sdc
Security Cloud Control SEC Module (AWS)	https://github.com/CiscoDevNet/terraform-aws-SecurityCloud Control-sec

Contribution to repositories

The Security Cloud Control team welcomes contributions to the repositories above. Please create pull pequests on these GitHub repositories if you wish to contribute to improving the provider and modules.

Related topics

- Deploy an SDC to vSphere Using Terraform
- Deploy an SDC to AWS VPC Using Terraform
- Deploy an SEC to AWS VPC Using Terraform



CHAPTER 33

Appendix

• Open source and third-party license in SDC, on page 869

Open source and third-party license in SDC

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*** amqplib ***

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Michael Bridgen <mikeb@squaremobius.net>

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*** async ***

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*** bluebird ***

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*** cheerio ***

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*** command-line-args ***

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*** json-buffer ***

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*** json-stable-stringify ***

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*** json-stringify-safe ***

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*** log4js ***

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